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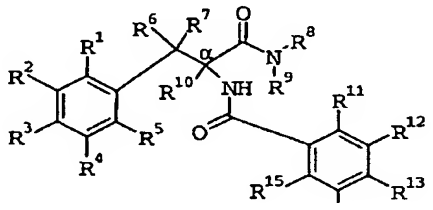
(54) DERIVES DE PHENYLALANINE EN TANT QU'HERBICIDES
(54) PHENYLALANINE DERIVATIVES AS HERBICIDES

(57)

The invention relates to phenylalanine derivatives of formula (I), wherein the radicals have the meaning cited in the description. The invention also relates to the utilization of said compounds as herbicides and/or for regulating plant growth.



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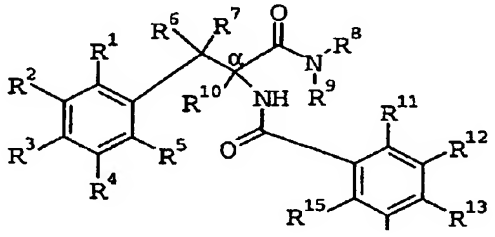

(I)

(57) Abrégé/Abstract:
The invention relates to phenylalanine derivatives of formula (I), wherein the radicals have the meaning cited in the description. The invention also relates to the utilization of said compounds as herbicides and/or for regulating plant growth.

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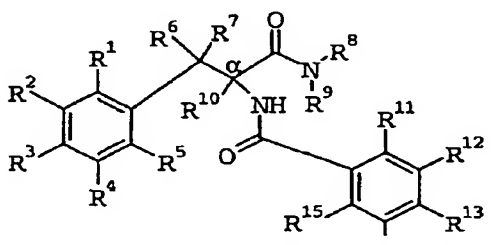
Zur Erklärung der Zweibuchstaben-Codes und der anderen Abkürzungen wird auf die Erklärungen ("Guidance Notes on Codes and Abbreviations") am Anfang jeder regulären Ausgabe der PCT-Gazette verwiesen.

(54) Title: PHENYLALANINE DERIVATIVES AS HERBICIDES

(54) Bezeichnung: PHENYLALANINDERIVATE ALS HERBIZIDE



(I)

(57) Abstract: The invention relates to phenylalanine derivatives of formula (I), wherein the radicals have the meaning cited in the description. The invention also relates to the utilization of said compounds as herbicides and/or for regulating plant growth.

(57) Zusammenfassung: Die vorliegende Erfindung betrifft Phenylalaninderivate der Formel (I), wobei die Reste die in der Beschreibung angegebene Bedeutung haben, sowie die Verwendung dieser Verbindungen als Herbizide und/oder zur Regulation des Wachstums von Pflanzen.

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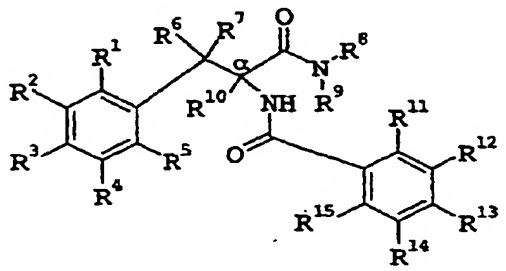
Phenylalanine derivatives as herbicides

The present invention relates to phenylalanine derivatives of the formula



(I)

in which

R^1, R^2, R^4, R^5, R^{13} and R^{15} independently of one another are hydrogen, halogen, hydroxyl, mercapto, nitro, cyano, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_2-C_6-haloalkenyl, C_2-C_6-haloalkynyl, C_1-C_6-haloalkoxy, C_3-C_6-haloalkenyloxy, C_3-C_6-haloalkynyloxy, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_3-C_6-haloalkynylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_3-C_6-haloalkynylsulfinyl, C_1-C_6-haloalkylsulfonyl, C_3-C_6-haloalkenylsulfonyl, C_3-C_6-haloalkynylsulfonyl, formyl, C_1-C_6-alkylcarbonyloxy, C_1-C_6-alkoxy-C_1-C_4-alkyl, C_3-C_6-alkenyloxy-C_1-C_4-alkyl, C_3-C_4-alkynyloxy-C_1-C_4-alkyl, C_1-C_6-alkylthio-C_1-C_4-alkyl, C_3-C_6-alkenylthio-C_1-C_4-alkyl, C_3-C_4-alkynylthio-C_1-C_4-alkyl, C_1-C_6-alkylcarbonyl-C_1-C_4-alkyl, C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkyl, C_1-C_6-alkoxycarbonyl-C_1-C_4-alkyl, C_1-C_6-alkoxy-C_1-C_4-alkoxy, C_3-C_6-alkenyloxy-C_1-C_4-alkoxy, C_3-C_4-alkynyloxy-C_1-C_4-alkoxy, C_1-C_6-alkylthio-C_1-C_4-alkoxy, C_3-C_6-alkenylthio-C_1-C_4-alkoxy, C_3-C_6-alkynylthio-C_1-C_4-alkoxy, C_1-C_6-alkylcarbonyl-C_1-C_4-alkoxy, C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkoxy, C_1-C_6-alkoxycarbonyl-C_1-C_4-alkoxy or CO-R^{16};

R^3 is hydrogen, halogen, mercapto, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_2-C_6-haloalkenyl, C_2-C_6-haloalkynyl, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_3-C_6-haloalkynylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_3-C_6-haloalkynylsulfinyl, C_1-C_6-haloalkylsulfonyl, C_3-C_6-haloalkenylsulfonyl, C_3-C_6-haloalkynylsulfonyl, C_1-C_6-alkoxy-C_1-C_4-alkyl, C_3-C_6-alkenyloxy-C_1-C_4-alkyl, C_3-C_4-alkynyloxy-C_1-C_4-alkyl, C_1-C_6-alkylthio-C_1-C_4-alkyl, C_3-C_6-alkenylthio-C_1-C_4-alkyl, C_3-C_6-alkynylthio-C_1-C_4-alkyl, C_1-C_6-alkylcarbonyl-C_1-C_4-alkyl, C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkyl, C_1-C_6-alkyloxycarbonyl-C_1-C_4-alkyl or CO-R^{16};

R^6 is hydrogen, C_2-C_6-alkenyl, C_2-C_6-alkynyl or C_1-C_6-alkyl;

R^7 is hydrogen, halogen, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-haloalkyl, C_2-C_6-haloalkenyl or C_2-C_6-haloalkynyl;

R^8 is methyl, ethyl, C_1-C_6-alkoxy or hydroxyl;

R^9 is hydrogen or C_1-C_6-alkyl;

R^{10} is hydrogen, C_1-C_6-alkyl, C_1-C_6-alkoxycarbonyl or C_1-C_6-haloalkoxylcarbonyl;

R^{11} is halogen, mercapto, nitro, cyano, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_2-C_6-haloalkenyl, C_2-C_6-haloalkynyl, C_1-C_6-haloalkoxy, C_3-C_6-haloalkenyloxy, C_3-C_6-haloalkynyloxy, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_3-C_6-haloalkynylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_3-C_6-haloalkynylsulfinyl, C_1-C_6-haloalkylsulfonyl, C_3-C_6-haloalkenylsulfonyl, C_3-C_6-haloalkynylsulfonyl, formyl, C_1-C_6-alkylcarbonyloxy, C_1-C_6-alkoxy-C_1-C_4-alkyl, C_2-C_6-alkenyloxy-C_1-C_4-alkyl, C_3-C_4-alkynyloxy-C_1-C_4-alkyl, C_1-C_6-alkylthio-C_1-C_4-alkyl, C_2-C_6-alkenylthio-C_1-C_4-alkyl, C_3-C_4-alkynylthio-C_1-C_4-alkyl,

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C_1-C_6-alkyloxycarbonyl-C_1-C_4-alkyl,
C_1-C_6-alkoxy-C_1-C_4-alkoxy, C_3-C_6-alkenyloxy-C_1-C_4-alkoxy,
C_3-C_4-alkynyloxy-C_1-C_4-alkoxy, C_1-C_6-alkylthio-C_1-C_4-alkoxy,
C_3-C_6-alkenylthio-C_1-C_4-alkoxy, C_3-C_6-alkynylthio-C_1-C_4-alkoxy,
C_1-C_6-alkylcarbonyl-C_1-C_4-alkoxy,
C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkoxy,
C_1-C_6-alkyloxycarbonyl-C_1-C_4-alkoxy or CO-R^{16};

R^{12} and R^{14} independently of one another are hydrogen, halogen, hydroxyl, mercapto, cyano, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_3-C_6-haloalkenyl, C_2-C_6-haloalkynyl, C_1-C_6-haloalkoxy, C_3-C_6-haloalkenyloxy, C_3-C_6-haloalkynyloxy, C_1-C_6-haloalkylthio, C_2-C_6-haloalkenylthio, C_3-C_6-haloalkynylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_3-C_6-haloalkynylsulfinyl, C_1-C_6-haloalkylsulfonyl, C_3-C_6-haloalkenylsulfonyl, C_3-C_6-haloalkynylsulfonyl, formyl, C_1-C_6-alkylcarbonyloxy, C_1-C_6-alkoxy-C_1-C_4-alkyl, C_3-C_6-alkenyloxy-C_1-C_4-alkyl, C_3-C_4-alkynyloxy-C_1-C_4-alkyl, C_1-C_6-alkylthio-C_1-C_4-alkyl, C_3-C_6-alkenylthio-C_1-C_4-alkyl, C_3-C_4-alkynylthio-C_1-C_4-alkyl, C_1-C_6-alkylcarbonyl-C_1-C_4-alkyl, C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkyl, C_1-C_6-alkyloxycarbonyl-C_1-C_4-alkyl, C_1-C_6-alkoxy-C_1-C_4-alkoxy, C_3-C_6-alkenyloxy-C_1-C_4-alkoxy, C_3-C_4-alkynyloxy-C_1-C_4-alkoxy, C_1-C_6-alkylthio-C_1-C_4-alkoxy, C_3-C_6-alkenylthio-C_1-C_4-alkoxy, C_3-C_6-alkynylthio-C_1-C_4-alkoxy, C_1-C_6-alkylcarbonyl-C_1-C_4-alkoxy, C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkoxy, C_1-C_6-alkyloxycarbonyl-C_1-C_4-alkoxy or CO-R^{16}; and

R^{16} is hydrogen, hydroxyl, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-haloalkyl, C_2-C_6-haloalkenyl, C_2-C_6-haloalkynyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-haloalkoxy, C_1-C_6-alkylamino or di(C_1-C_6-alkyl)amino;

or

R^7 together with R^{10} forms a C_3-C_4-alkylene or —alkenylene chain, where the C_3-C_4-alkylene or —alkenylene chain may carry 1-3 substituents from the group consisting of halogen, nitro or cyano and/or one carbon atom of the C_3-C_4-alkylene chain may be replaced by a heteroatom selected from the group consisting of oxygen, sulfur and nitrogen and/or by a carbonyl group,

and the agriculturally useful salts of the compounds I.

Moreover, the invention relates to

- the use of the compounds I as herbicides,
- herbicidal compositions which comprise the compounds I as active substances,
- processes for preparing the compounds I and for preparing herbicidal compositions using the compounds I, and also
- methods for controlling undesirable vegetation using the compounds I and/or
- for controlling the growth of plants,
- compositions for regulating the growth of plants, which compositions comprise the compounds I as active substances,
- processes for preparing compositions for regulating the growth of plants using the compounds I, and also
- methods for regulating the growth of plants using the compounds I.

Numerous amino acid derivatives are disclosed in the literature; WO 01/21584, for example, describes tyrosine derivatives which can be used for treating chronic inflammatory conditions.

EP-A 805 147 discloses amino acid derivatives which can be used as calcium channel modulators.

WO 97/19908 describes phenylalanine derivatives whose phenyl ring is preferably substituted by fluorine and which can be used as fungicides.

4JP-A 02088549 teaches derivatives of amino acids which are preferably derived from proline, serine or threonine. The compounds described have antithrombotic action.

WO 97/05865 discloses amino acid derivatives which are preferably SO_2-substituted at the amino group group and are used as C-proteinase inhibitors.

DE-A 33 326 333 discloses carboxylic acid derivatives suitable for preparing medicaments.

JP 3294-253-A teaches amino acid derivatives as inhibitors of cholecystokinin and gastrin receptors.

It is an object of the present invention to provide herbicidally active compounds.
The object also extends to the provision of compounds suitable for regulating the growth of plants.

We have found that this object is achieved by providing the phenylalanine derivatives of the formula I defined at the outset.

Furthermore, it has been found that the compounds I are also suitable for regulating the growth of plants. In this respect, we have found compositions for regulating the growth of plants, processes for preparing these compositions and methods for regulating the growth of plants using the compounds I.

Owing to the asymmetrically substituted α-carbon, these compounds are present either as racemates, enantiomer mixtures or as pure enantiomers and may, if they carry chiral substituents on the α-carbon or have further centers of chirality, also be present as diastereomer mixtures. Furthermore, depending on the substitution pattern, the compounds I can also be present as diastereomer mixtures. Preference is given to compounds of the formula I in which the α-carbon has the S configuration. Hereinbelow, these compounds are also referred to as S enantiomers.

Suitable agriculturally useful salts are especially the salts of those cations or the acid addition salts of those acids whose cations and anions, respectively, have no adverse effect on the herbicidal action of the compounds I. Thus, suitable cations are in particular the ions of the alkali metals, preferably sodium and potassium, of the alkaline earth metals, preferably calcium, magnesium and barium, and of the transition metals, preferably manganese, copper, zinc and iron, and also the ammonium ion which, if desired, may carry one to four C_1-C_4-alkyl substituents

and/or one phenyl or benzyl substituent, preferably diisopropylammonium, tetramethylammonium, tetrabutylammonium, trimethylbenzylammonium, furthermore phosphonium ions, sulfonium ions, preferably tri(C_1-C_4-alkyl)sulfonium, and sulfoxonium ions, preferably tri(C_1-C_4-alkyl)sulfoxonium.

Anions of useful acid addition salts are primarily chloride, bromide, fluoride, hydrogen sulfate, sulfate, dihydrogen phosphate, hydrogen phosphate, phosphate, nitrate, bicarbonate, carbonate, hexafluorosilicate, hexafluorophosphate, benzoate, and also the anions of C_1-C_4-alkanoic acids, preferably formate, acetate, propionat and butyrate. They can be formed by reacting I with an acid of the corresponding anion, preferably of hydrochloric acid, hydrobromic acid, sulfuric acid, phosphoric acid or nitric acid.

The organic moieties mentioned in the definition of the substituents R^1 to R^{15} are – like the term halogen – collective terms for individual enumerations of the individual group members. All hydrocarbon chains, i.e. all alkyl, alkenyl, alkynyl, haloalkyl, haloalkenyl, haloalkynyl moieties, can be straight-chain or branched. Halogenated substituents preferably carry one to five identical or different halogen atoms. The term halogen denotes in each case fluorine, chlorine, bromine or iodine.

Examples of meanings are:

- halogen is fluorine, chlorine or bromine;

- C_1-C_4-alkyl is methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl, 2-methylpropyl or 1,1-dimethylethyl;

- C_1-C_6-alkyl is a C_1-C_4-alkyl radical as mentioned above or, for example, n-pentyl, 1-methylbutyl, 2-methylbutyl, 3-methylbutyl, 2,2-dimethylpropyl, 1-ethylpropyl, n-hexyl, 1,1-dimethylpropyl, 1,2-dimethylpropyl, 1-methylpentyl, 2-methylpentyl, 3-methylpentyl, 4-methylpentyl, 1,1-dimethylbutyl, 1,2-dimethylbutyl, 1,3-dimethylbutyl, 2,2-dimethylbutyl, 2,3-dimethylbutyl, 3,3-dimethylbutyl, 1-ethylbutyl, 2-ethylbutyl, 1,1,2-trimethylpropyl, 1,2,2-trimethylpropyl, 1-ethyl-1-methylpropyl or 1-ethyl-2-methylpropyl;

- C_3-C_4-alkenyl is a mono- or diethylenically unsaturated radical having 3 or 4 carbon atoms, such as prop-1-en-1-yl, allyl, 1-methylethenyl, but-1-en-1-yl, but-1-en-2-yl, but-1-en-3-yl,

but-2-en-1-yl, 1-methylprop-1-en-1-yl, 2-methylprop-1-en-1-yl, 1-methylprop-2-en-1-yl or 2-methylprop-2-en-1-yl;

- C_5-C_6-alkenyl is a C_3-C_4-alkenyl radical as mentioned above or is a mono- or polyethylenically unsaturated radical having 5 or 6 carbon atoms, such as, for example, n-penten-1-yl, n-penten-2-yl, n-penten-3-yl, n-penten-4-yl, 1-methylbut-1-en-1-yl, 2-methylbut-1-en-1-yl, 3-methylbut-1-en-1-yl, 1-methylbut-2-en-1-yl, 2-methylbut-2-en-1-yl, 3-methylbut-2-en-1-yl, 1-methylbut-3-en-1-yl, 2-methylbut-3-en-1-yl, 3-methylbut-3-en-1-yl, 1,1-dimethylprop-2-en-1-yl, 1,2-dimethyl-prop-1-en-1-yl, 1,2-dimethylprop-2-en-1-yl, 1-ethylprop-1-en-2-yl, 1-ethylprop-2-en-1-yl, n-hex-1-en-1-yl, n-hex-2-en-1-yl, n-hex-3-en-1-yl, n-hex-4-en-1-yl, n-hex-5-en-1-yl, 1-methylpent-1-en-1-yl, 2-methylpent-1-en-1-yl, 3-methylpent-1-en-1-yl, 4-methylpent-1-en-1-yl, 1-methylpent-2-en-1-yl, 2-methylpent-2-en-1-yl, 3-methylpent-2-en-1-yl, 4-methylpent-2-en-1-yl, 1-methylpent-3-en-1-yl, 2-methylpent-3-en-1-yl, 3-methylpent-3-en-1-yl, 4-methylpent-3-en-1-yl, 1-methylpent-4-en-1-yl, 2-methylpent-4-en-1-yl, 3-methylpent-4-en-1-yl, 4-methylpent-4-en-1-yl, 1,1-dimethylbut-2-en-1-yl, 1,1-dimethylbut-3-en-1-yl, 1,2-dimethylbut-1-en-1-yl, 1,2-dimethylbut-2-en-1-yl, 1,2-dimethylbut-3-en-1-yl, 1,3-dimethylbut-1-en-1-yl, 1,3-dimethyl-but-2-en-1-yl, 1,3-dimethylbut-3-en-1-yl, 2,2-dimethylbut-3-en-1-yl, 2,3-dimethylbut-1-en-1-yl, 2,3-dimethylbut-2-en-1-yl, 2,3-dimethylbut-3-en-1-yl, 3,3-dimethylbut-1-en-1-yl, 3,3-dimethylbut-2-en-1-yl, 1-ethylbut-1-en-1-yl, 1-ethylbut-2-en-1-yl, 1-ethylbut-3-en-1-yl, 2-ethylbut-1-en-1-yl, 2-ethylbut-2-en-1-yl, 2-ethylbut-3-en-1-yl, 1,1,2-trimethylprop-2-en-1-yl, 1-ethyl-1-methylprop-2-en-1-yl, 1-ethyl-2-methylprop-1-en-1-yl or 1-ethyl-2-methylprop-2-en-1-yl;

- C_2-C_6-alkenyl is a C_3-C_6-alenylkyl radical as mentioned above or ethenyl;

- C_2-C_4-alkenyl is a C_3-C_4-alenylkyl radical as mentioned above or ethenyl;

- C_2-C_4-alkynyl is: ethynyl, prop-1-yn-1-yl, prop-2-yn-1-yl, n-but-1-yn-1-yl, n-but-1-yn-3-yl, n-but-1-yn-4-yl or n-but-2-yn-1-yl;

- C_3-C_6-alkynyl is a C_2-C_4-alkynyl radical as mentioned above or n-pent-1-yn-1-yl, n-pent-1-yn-3-yl, n-pent-1-yn-4-yl, n-pent-1-yn-5-yl, n-pent-2-yn-1-yl, n-pent-2-yn-4-yl, n-pent-2-yn-5-yl, 3-methylbut-1-yn-3-yl, 3-methylbut-1-yn-4-yl, n-hex-1-yn-1-yl, n-hex-1-yn-3-yl, n-hex-1-yn-4-yl, n-hex-1-yn-5-yl, n-hex-1-yn-6-yl, n-hex-2-yn-1-yl, n-hex-2-yn-4-yl, n-hex-2-yn-5-yl, n-hex-2-yn-6-yl, n-hex-3-yn-1-yl, n-hex-3-yn-2-yl, 3-methylpent-1-yn-1-yl, 3-methylpent-1-yn-3-yl, 3-methyl-pent-1-yn-4-yl, 3-methylpent-1-yn-5-yl, 4-methylpent-1-yn-1-yl, 4-methylpent-2-yn-4-yl and 4-methylpent-2-yn-5-yl;

- C_2-C_6-alkynyl is a C_3-C_6-alkynylkyl radical as mentioned above or ethynyl;

- C_3-C_6-alkenyloxy is a C_3-C_6-alkenyl radical as mentioned above which is attached to the skeleton via an oxygen atom (-O-);

- C_1-C_4-alkoxy is a C_1-C_4-alkyl radical as mentioned above which is attached to the skeleton via an oxygen atom (-O-);

- C_1-C_6-alkoxy is a C_1-C_6-alkyl radical as mentioned above which is attached to the skeleton via an oxygen atom (-O-);

- C_3-C_6-alkenyloxy is a C_3-C_6-alkenyl radical as mentioned above which is attached to the skeleton via an oxygen atom (-O-);

- C_3-C_6-alkynyloxy is a C_3-C_6-alkynyl radical as mentioned above which is attached to the skeleton via an oxygen atom (-O-);

- C_1-C_6-alkylthio is a C_1-C_6-alkyl radical as mentioned above which is attached to the skeleton via a sulfur atom (-S-);

- C_3-C_6-alkenylthio is a C_3-C_6-alkenyl radical as mentioned above which is attached to the skeleton via a sulfur atom (-S-);

- C_3-C_6-alkynylthio is a C_3-C_6-alkynyl radical as mentioned above which is attached to the skeleton via a sulfur atom (-S-);

- C_1-C_6-alkylsulfinyl is a C_1-C_6-alkyl radical as mentioned above which is attached to the skeleton via a sulfinyl group (-SO-);

- C_3-C_6-alkenylsulfinyl is a C_3-C_6-alkenyl radical as mentioned above which is attached to the skeleton via a sulfinyl group (-SO-);

- C_3-C_6-alkynylsulfinyl is a C_3-C_6-alkynyl radical as mentioned above which is attached to the skeleton via a sulfinyl group (-SO-);

- C_1-C_6-alkylsulfonyl is a C_1-C_6-alkyl radical as mentioned above which is attached to the skeleton via a sulfonyl group ($-SO_2-$);

- C_3-C_6-alkenylsulfonyl is a C_3-C_6-alkenyl radical as mentioned above which is attached to the skeleton via a sulfonyl group ($-SO_2-$);

- C_3-C_6-alkynylsulfonyl is a C_3-C_6-alkynyl radical as mentioned above which is attached to the skeleton via a sulfonyl group ($-SO_2-$);

- C_1-C_4-haloalkyl is a C_1-C_4-alkyl radical as mentioned above which is partially or fully substituted by fluorine, chlorine, bromine and/or iodine, i.e., for example, chloromethyl, dichloromethyl, trichloromethyl, fluoromethyl, difluoromethyl, trifluoromethyl, chlorfluoromethyl, dichlorofluoromethyl, chlorodifluoromethyl, 2-fluoroethyl, 2-chloroethyl, 2-bromoethyl, 2-iodoethyl, 2,2-difluoroethyl, 2,2,2-trifluoroethyl, 2-chloro-2-fluoroethyl, 2-chloro-2,2-difluoroethyl, 2,2-dichloro-2-fluoroethyl, 2,2,2-trichloroethyl, pentafluoroethyl, 2-fluoropropyl, 3-fluoropropyl, 2,2-difluoropropyl, 2,3-difluoropropyl, 2-chloropropyl, 3-chloropropyl, 2,3-dichloropropyl, 2-bromopropyl, 3-bromopropyl, 3,3,3-trifluoropropyl, 3,3,3-trichloropropyl, 2,2,3,3,3-pentafluoropropyl, heptafluoropropyl, 1-(fluoromethyl)-2-fluoroethyl, 1-(chloromethyl)-2-chloroethyl, 1-(bromomethyl)-2-bromoethyl, 4-fluorobutyl, 4-chlorobutyl, 4-bromobutyl or nonafluorobutyl, in particular chloromethyl, fluoromethyl, difluoromethyl, trifluoromethyl, 2-fluoroethyl, 2-chloroethyl or 2,2,2-trifluoroethyl;

- C_1-C_6-haloalkyl is a C_1-C_6-alkyl radical as mentioned above which is partially or fully substituted by fluorine, chlorine, bromine and/or iodine, i.e. for example, one of the radicals mentioned under C_1-C_4-haloalkyl or 5-fluoro-1-pentyl, 5-chloro-1-pentyl, 5-bromo-1-pentyl, 5-iodo-1-pentyl, 5,5,5-trichloro-1-pentyl, undecafluoropentyl, 6-fluoro-1-hexyl, 6-chloro-1-hexyl, 6-bromo-1-hexyl, 6-iodo-1-hexyl, 6,6,6-trichloro-1-hexyl or dodecafluorohexyl;

- C_2-C_6-haloalkenyl is a C_2-C_6-alkenyl radical as mentioned above in which some or all of the hydrogen atoms may be replaced by halogen atoms as mentioned above, in particular by fluorine, chlorine and bromine;

- C_2-C_6-haloalkynyl is a C_2-C_6-alkynyl radical as mentioned above in which some or all of the hydrogen atoms may be replaced by halogen atoms as mentioned above, in particular by fluorine, chlorine and bromine;

- C_1-C_6-haloalkoxy is a C_1-C_6-haloalkyl radical as mentioned above which is attached to the skeleton via an oxygen atom (-O-);

- C_3-C_6-haloalkenyloxy is a C_3-C_6-alkenyloxy radical as mentioned above which is partially or fully substituted by fluorine, chlorine, bromine and/or iodine;

- C_3-C_6-haloalkynyloxy is a C_3-C_6-alkynyloxy radical as mentioned above which is partially or fully substituted by fluorine, chlorine, bromine and/or iodine;

- C_1-C_6-haloalkylthio is a C_1-C_6-haloalkyl radical as mentioned above which is attached to the skeleton via a sulfur atom (-S-);

- C_3-C_6-haloalkenylthio is a C_3-C_6-haloalkenyl radical as mentioned above which is attached to the skeleton via a sulfur atom (-S-);

- C_3-C_6-haloalkynylthio is a C_3-C_6-haloalkynyl radical as mentioned above is attached to the skeleton via a sulfur atom (-S-);

- C_1-C_6-haloalkylsulfinyl is a C_1-C_6-haloalkyl radical as mentioned above which is attached to the skeleton via a sulfinyl group (-SO-);

- C_3-C_6-haloalkenylsulfinyl is a C_3-C_6-haloalkenyl radical as mentioned above which is attached to the skeleton via a sulfinyl group (-SO-);

- C_3-C_6-haloalkynylsulfinyl is a C_3-C_6-haloalkynyl radical as mentioned above which is attached to the skeleton via a sulfinyl group (-SO-);

- C_1-C_6-haloalkylsulfonyl is a C_1-C_6-haloalkyl radical as mentioned above which is attached to the skeleton via a sulfonyl group (-SO_2-);

- C_3-C_6-haloalkenylsulfonyl is a C_3-C_6-haloalkenyl radical as mentioned above which is attached to the skeleton via a sulfonyl group (-SO_2-);

- C_3-C_6-haloalkynylsulfonyl is a C_3-C_6-haloalkynyl radical as mentioned above which is attached to the skeleton via a sulfonyl group (-SO_2-);

- C_1-C_6-alkylcarbonyloxy is a C_1-C_6-alkyl radical which is attached to the skeleton via a carbonyloxy group (-C(O)-O-) via the oxygen;

- C_1-C_6-alkoxy-C_1-C_4-alkyl is a C_1-C_4-alkyl radical as mentioned above which is substituted by a C_1-C_6-alkoxy radical as mentioned above, for example methoxymethyl, ethoxymethyl, n-propoxymethyl, i-propoxymethyl, n-butoxymethyl, (1-methylpropoxy)methyl, (2-methylpropoxy)methyl, t-butoxymethyl, 2-(methoxy)ethyl, 2-(ethoxy)ethyl, 2-(n-propoxy)ethyl, 2-(1-methylethoxy)ethyl, 2-(n-butoxy)ethyl, 2-(1-methylpropoxy)ethyl, 2-(2-methylpropoxy)ethyl, 2-(1,1-dimethylethoxy)ethyl, 2-(methoxy)propyl, 2-(ethoxy)propyl, 2-(n-propoxy)propyl, 2-(1-methylethoxy)propyl, 2-(n-butoxy)-propyl, 2-(1-methylpropoxy)propyl, 2-(2-methylpropoxy)propyl, 2-(1,1-dimethylethoxy)propyl, 3-(methoxy)propyl, 3-(ethoxy)-propyl, 3-(n-propoxy)propyl, 3-(1-methylethoxy)propyl, 3-(n-butoxy)propyl, 3-(1-methylpropoxy)propyl, 3-(2-methylpropoxy)propyl, 3-(1,1-dimethylethoxy)propyl, 2-(methoxy)butyl, 2-(ethoxy)butyl, 2-(n-propoxy)butyl, 2-(1-methylethoxy)butyl, 2-(n-butoxy)butyl, 2-(1-methylpropoxy)butyl, 2-(2-methylpropoxy)butyl, 2-(1,1-dimethylethoxy)butyl, 3-(methoxy)butyl, 3-(ethoxy)butyl, 3-(n-propoxy)butyl, 3-(1-methylethoxy)butyl, 3-(n-butoxy)butyl, 3-(1-methylpropoxy)butyl, 3-(2-methylpropoxy)butyl, 3-(1,1-dimethylethoxy)butyl, 4-(methoxy)butyl, 4-(ethoxy)butyl, 4-(n-propoxy)butyl, 4-(1-methylethoxy)butyl, 4-(n-butoxy)butyl, 4-(1-methylpropoxy)butyl, 4-(2-methylpropoxy)butyl or 4-(1,1-dimethylethoxy)butyl;

- C_3-C_6-alkenyloxy-C_1-C_4-alkyl is a C_1-C_4-alkyl radical as mentioned above which is substituted by a C_3-C_6-alkenyloxy radical as mentioned above;

- C_3-C_4-alkynyloxy-C_1-C_4-alkyl is a C_1-C_4-alkyl radical as mentioned above which is substituted by a C_3-C_4-alkynyloxy radical as mentioned above;

- C_1-C_6-alkylthio-C_1-C_4-alkyl is a C_1-C_4-alkyl radical as mentioned above which is substituted by a C_1-C_6-alkylthio radical as mentioned above;

- C_3-C_6-alkenylthio-C_1-C_4-alkyl is a C_1-C_4-alkyl radical as mentioned above which is substituted by a C_3-C_6-alkenylthio radical as mentioned above;

- C_3-C_4-alkynylthio-C_1-C_4-alkyl is a C_1-C_4-alkyl radical as mentioned above which is substituted by a C_3-C_6-alkynylthio radical as mentioned above;

- C_1-C_6-alkylcarbonyl is a C_1-C_6-alkyl radical as mentioned above which is attached to the skeleton via a carbonyl group (-CO-);

- C_1-C_6-alkoxycarbonyl is a C_1-C_6-alkoxy radical as mentioned above which is attached to the skeleton via a carbonyl group (-CO-);

- C_1-C_6-alkylcarbonyl-C_1-C_4-alkyl is a C_1-C_4-alkyl radical as mentioned above which is substituted by a C_1-C_6-alkylcarbonyl radical as mentioned above;

- C_1-C_6-alkoxycarbonyl-C_1-C_4-alkyl is a C_1-C_4-alkyl radical as mentioned above which is substituted by a C_1-C_6-alkoxycarbonyl radical as mentioned above;

- C_1-C_6-alkoxy-C_1-C_4-alkyl is a C_1-C_4-alkyl radical which is substituted by C_1-C_6-alkoxy as mentioned above, where the alkyl radical is defined as mentioned above;

- C_3-C_6-alkenyloxy-C_1-C_4-alkyl is a C_1-C_4-alkyl radical which is substituted by C_3-C_6-alkenyloxy as mentioned above, where the C_1-C_4-alkyl radical is defined as mentioned above;

- C_3-C_6-alkynyloxy-C_1-C_4-alkyl is a C_1-C_4-alkyl radical which is substituted by C_3-C_6-alkynyloxy as mentioned above, where the C_1-C_4-alkyl radical is defined as mentioned above;

- C_1-C_6-alkylthio-C_1-C_4-alkyl is a C_1-C_4-alkyl radical which is substituted by C_1-C_6-alkylthio as mentioned above, where the C_1-C_4-alkyl radical is defined as mentioned above;

- C_1-C_6-alkoxy-C_1-C_4-alkoxy is a C_1-C_6-alkoxy radical which is substituted by C_1-C_4-alkoxy as mentioned above, where the C_1-C_4-alkoxy radical is defined as mentioned above;

- C_3-C_6-alkenyloxy-C_1-C_4-alkoxy is a C_1-C_4-alkoxy radical which is substituted by C_3-C_6-alkenyloxy as mentioned above, where the C_1-C_4-alkoxy radical is defined as mentioned above;

- C_3-C_4-alkynyloxy-C_1-C_4-alkoxy is a C_1-C_4-alkoxy radical which is substituted by C_3-C_4-alkynyloxy as mentioned above, where the C_1-C_4-alkoxy radical is defined as mentioned above;

- C_1-C_6-alkylthio-C_1-C_4-alkoxy is a C_1-C_4-alkoxy radical which is substituted by C_1-C_6-alkylthio as mentioned above, where the C_1-C_4-alkoxy radical is defined as mentioned above;

- C_3-C_6-alkenylthio-C_1-C_4-alkoxy is a C_1-C_4-alkoxy radical which is substituted by C_3-C_6-alkenylthio as mentioned above where the C_1-C_4-alkoxy radical is defined as mentioned above;

- C_3-C_6-alkynylthio-C_1-C_4-alkoxy is a C_1-C_4-alkoxy radical which is substituted by C_3-C_6-alkynylthio as mentioned above where the C_1-C_4-alkoxy radical is defined as mentioned above;

- C_1-C_6-alkylcarbonyl-C_1-C_4-alkoxy is a C_1-C_4-alkoxy radical which is substituted by C_1-C_6-alkylcarbonyl as mentioned above where the C_1-C_4-alkoxy radical is defined as mentioned above;

- C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkoxy is a C_1-C_4-alkoxy radical which is substituted by C_1-C_6-alkylcarbonyloxy as mentioned above where the C_1-C_4-alkoxy radical is defined as mentioned above;

- C_1-C_6-alkoxycarbonyl-C_1-C_4-alkoxy is a C_1-C_4-alkoxy radical which is substituted by C_1-C_6-alkoxycarbonyl as mentioned above where the C_1-C_4-alkoxy radical is defined as mentioned above;

- C_3-C_4-alkylene is n-propylene ($-CH_2CH_2CH_2-$) or n-butylene ($-CH_2CH_2CH_2CH_2-$);

- C_3-C_4-alkenylene is a divalent unbranched chain of one or two CH=CH- groups and/or one or two CH_2 groups in any position, for example $-CH=CHCH_2-$, $CH_2CH=CHCH_2$, $CH=CHCH_2CH_2$ or $CH=CH-CH=CH_2$;

- C_1-C_4-alkylamino is a C_1-C_4-alkyl radical as mentioned above which is attached to the skeleton via an amino group (-NH-);

- C_1-C_6-alkylamino is a C_1-C_6-alkyl radical as mentioned above which is attached to the skeleton via an amino group (-NH-);

- C_1-C_4-dialkylamino are two independent C_1-C_4-alkyl radicals as mentioned above which are attached to the skeleton via a nitrogen atom (>N-);

- C_1-C_6-dialkylamino are two independent C_1-C_6-alkyl radicals as mentioned above which are attached to the skeleton via a nitrogen atom (>N-).

With respect to the use of the substituted phenylalanine derivatives I as herbicides, preference is given to those compounds I in which the substituents are as defined above, in each case on their own or in combination:

R^1 is hydrogen, halogen, nitro, cyano, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy, C_3-C_6-haloalkenyloxy, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_1-C_6-haloalkylsulfonyl or C_3-C_6-haloalkenylsulfonyl;
preferably hydrogen, halogen, cyano, C_1-C_6-alkyl, C_1-C_6-alkylthio, C_1-C_6-alkylsulfinyl or C_1-C_6-alkylsulfonyl;
particularly preferably hydrogen, cyano, halogen or C_1-C_6 alkyl;

R^2 is hydrogen, halogen, nitro, cyano, C_1-C_6-alkyl, C_2-C_6-alkynyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy, C_3-C_6-haloalkenyloxy or C_3-C_6-halogenalkynyloxy;
preferably hydrogen, halogen, cyano, C_1-C_6-haloalkyl or C_1-C_6-alkyl;
particularly preferably hydrogen or C_1-C_6-haloalkyl;
furthermore particularly preferably halogen or C_1-C_6-alkyl;
very particularly preferably hydrogen, halogen or C_1-C_6-alkyl;

R^3 is hydrogen, halogen, C_1-C_6-alkyl or C_1-C_6-haloalkyl;
preferably hydrogen or halogen;

R^4 is hydrogen, halogen, nitro, cyano, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-haloalkyl or C_1-C_6-haloalkoxy;
preferably hydrogen, halogen, C_1-C_6-alkyl or C_1-C_6-haloalkyl;
particularly preferably hydrogen or halogen;
very particularly preferably hydrogen;

R^5 is hydrogen, halogen, nitro, cyano, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy or C_3-C_6-haloalkenyloxy; preferably hydrogen, halogen, C_1-C_6-alkyl or C_1-C_6-haloalkyl, particularly preferably hydrogen;
likewise particularly preferably C_1-C_6-alkyl or halogen;

R^6 is hydrogen or C_1-C_6-alkyl;

R^7 is hydrogen, halogen, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl or C_1-C_6-haloalkyl;
preferably hydrogen, C_1-C_6-alkyl, C_2-C_6-alkenyl or C_2-C_6-alkynyl;
particularly preferably also C_1-C_6-alkyl or hydrogen;

R^8 is methyl or methoxy;
likewise hydroxyl;

R^9 is hydrogen or methyl;
preferably hydrogen;
when R^8 is hydroxyl, preferably methyl;

R^{10} is hydrogen, C_1-C_6-alkyl, C_1-C_6-alkoxycarbonyl, C_1-C_4-haloalkoxycarbonyl;
preferably hydrogen;

R^{11} is halogen, nitro, cyano, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_1-C_6-haloalkylsulfonyl, C_3-C_6-haloalkenylsulfonyl or CO-R^{16};
preferably halogen, cyano, C_1-C_6-alkylthio, C_1-C_6-alkylsulfinyl, C_1-C_6-alkylsulfonyl, C_1-C_6-alkyl, C_1-C_6-haloalkyl or CO-R^{16};
in addition preferably C_1-C_6-haloalkoxy, C_1-C_6-haloalkylthio;
particularly preferably halogen, cyano, C_1-C_6-alkylthio,

C_1-C_6-alkylsulfinyl, C_1-C_6-alkylsulfonyl, C_1-C_6-alkyl or C_1-C_6-haloalkyl;
likewise particularly preferably C_1-C_6-haloalkoxy, C_1-C_6-haloalkylthio;
very particularly preferably halogen or C_1-C_6-haloalkyl, where the halogen substituent in C_1-C_6-haloalkyl is preferably fluorine;
furthermore very particularly preferably C_1-C_6-haloalkoxy, C_1-C_6-haloalkylthio, C_1-C_6-alkylsulfonyl or C_1-C_6-alkylsulfinyl, where the halogen substituent in C_1-C_6-haloalkyl, C_1-C_6-haloalkylthio, C_1-C_6-alkylsulfonyl or C_1-C_6-alkylsulfinyl is preferably fluorine;

R^{13} is hydrogen, halogen, nitro, cyano, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_1-C_6-haloalkylsulfonyl, C_3-C_6-haloalkenylsulfonyl or CO-R^{16};
preferably hydrogen, halogen, cyano, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-alkylthio, C_1-C_6-alkylsulfinyl, C_1-C_6-alkylsulfonyl, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy or C_1-C_6-haloalkylthio or CO-R^{16};
particularly preferably hydrogen, halogen, cyano, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-alkylthio, C_1-C_6-alkylsulfinyl, C_1-C_6-alkylsulfonyl, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy or C_1-C_6-haloalkylthio;
very particularly preferably halogen, such as, for example, chlorine and fluorine, C_1-C_6-alkyl, C_1-C_6-haloalkyl, where the halogen substituent in C_1-C_6-haloalkyl is preferably fluorine;
likewise very particularly preferably hydrogen;

R^{12} and R^{14} are hydrogen, halogen, cyano, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_1-C_6-haloalkylsulfonyl, C_3-C_6-haloalkenylsulfonyl, or CO-R^{16};
preferably hydrogen, halogen, cyano, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-alkylthio, C_1-C_6-alkylsulfinyl, C_1-C_6-alkylsulfonyl, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy, C_1-C_6-haloalkylthio or CO-R^{16};
particularly preferably hydrogen, halogen, cyano, C_1-C_6-alkyl,

C_1-C_6-alkoxy, C_1-C_6-alkylthio, C_1-C_6-alkylsulfinyl, C_1-C_6-alkylsulfonyl, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy or C_1-C_6-haloalkylthio;
R^{12} is very particularly preferably hydrogen or halogen, such as, for example, chlorine and fluorine, C_1-C_6-alkyl, C_1-C_6-haloalkyl, where the halogen substituent in C_1-C_6-haloalkyl is preferably fluorine;

R^{12} is furthermore very particularly preferably cyano, C_1-C_6-haloalkoxy or C_1-C_6-haloalkylthio, where the halogen substituent in C_1-C_6-haloalkyl or C_1-C_6-haloalkylthio is preferably fluorine;

R^{14} is furthermore very particularly preferably hydrogen;

R^{15} is hydrogen, halogen, C_1-C_6-alkyl or C_1-C_6-haloalkyl; preferably hydrogen; and

R^{16} is hydrogen, hydroxyl, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-Alkoxy, C_1-C_6-haloalkoxy, C_1-C_6-alkylamino or di(C_1-C_6-alkyl)amino, preferably C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkoxy, C_1-C_6-haloalkoxy, C_1-C_6-alkylamino or di(C_1-C_6-alkyl)amino.

Preference is furthermore given to phenylalanine derivatives of the formula I where in each case independently of one another

R^1 is hydrogen, halogen, such as fluorine, chlorine or bromine, cyano, C_1-C_4-alkyl, such as methyl, ethyl, n-propyl or isopropyl;
preferably hydrogen, fluorine, methyl;
furthermore preferably chlorine or ethyl;

R^2 is hydrogen, C_1-C_4-haloalkyl, such as fluoromethyl, difluoromethyl or trifluoromethyl, halogen, such as fluorine, chlorine or bromine;
likewise C_1-C_4-alkyl such as methyl, ethyl, n-propyl or isopropyl;
preferably hydrogen or C_1-C_4-alkyl, such as methyl, ethyl, n-propyl or isopropyl;
in addition preferably fluorine, chlorine or bromine;
particularly preferably hydrogen, fluorine, chlorine or methyl;

R^3 is hydrogen, halogen, such as fluorine, chlorine or bromine, C_1-C_4-alkyl, such as methyl, ethyl, n-propyl or isopropyl;
preferably hydrogen, fluorine, chlorine or bromine;

furthermore preferably methyl;
particularly preferably hydrogen, fluorine or chlorine;

R^4 is hydrogen, C_1-C_4-haloalkyl, such as fluoromethyl, difluoromethyl or trifluoromethyl, halogen, such as fluorine, chlorine or bromine, C_1-C_4-alkyl, such as methyl, ethyl, n-propyl or isopropyl;
preferably hydrogen;

R^5 is hydrogen, C_1-C_4-haloalkyl such as fluoromethyl, difluoromethyl or trifluoromethyl, halogen, such as fluorine, chlorine or bromine, C_1-C_4-alkyl, such as methyl, ethyl, n-propyl or isopropyl;
preferably hydrogen;
in addition preferably fluorine, chlorine or methyl.

Preference is furthermore given to phenylalanine derivatives of the formula I where in each case independently of one another

R^7 is hydrogen, haloalkyl, such as fluoromethyl, difluoromethyl or trifluoromethyl, halogen, such as fluorine, chlorine or bromine, C_1-C_4-alkyl, such as methyl, ethyl, n-propyl or isopropyl, or C_2-C_4-alkenyl, such as ethenyl, prop-1-en-1-yl, 1-methylethenyl, but-1-en-1-yl, but-1-en-2-yl, 1-methylprop-1-en-1-yl or 2-methylprop-1-en-1-yl, C_2-C_4-alkynyl, such as ethynyl, prop-1-yn-1-yl or n-but-1-yn-1-yl;
preferably hydrogen, C_1-C_4-alkyl, such as methyl or ethyl, or C_2-C_4-alkenyl, such as ethenyl, prop-1-en-1-yl, 1-methylethenyl, but-1-en-1-yl, but-1-en-2-yl, 1-methylprop-1-en-1-yl or 2-methylprop-1-en-1-yl;
particularly preferably hydrogen or methyl;
furthermore particularly preferably ethyl; and

R^6 is hydrogen.

Preference is furthermore given to phenylalanine derivatives of the formula I where R^{10} is hydrogen.

Preference is is furthermore given to phenylalanine derivatives of the formula I where in each case independently of one another

R^8 is C_1-C_6-alkoxy or hydroxyl and

R^9 is hydrogen, C_1-C_6-alkyl, preferably methyl.

Preference is also given to compounds I in which

R^8 is methyl or ethyl, preferably methyl, and

R^9 is hydrogen or C_1-C_6-alkyl, preferably hydrogen.

Particular preference is given to compounds I in which

R^8 is C_1-C_4-alkoxy, C_1-C_4-alkyl or hydroxyl;
preferably methoxy, methyl or hydroxyl;

R^9 is hydrogen, C_1-C_6-alkyl, preferably hydrogen or methyl.

In this case, R^9 is then preferably methyl, if R^8 is hydroxyl.

Preference is also given to compounds I in which

R^8 is methyl and

R^9 is hydrogen.

Preference is furthermore given to phenylalanine derivatives of the formula I where in each case independently of one another

R^{11} is cyano, C_1-C_4-alkyl, such as methyl, ethyl, n-propyl or isopropyl, C_1-C_4-haloalkyl, such as fluoromethyl, difluoromethyl or trifluoromethyl, halogen, such as fluorine, chlorine or bromine, C_1-C_4-alkylsulfonyl, such as methylsulfonyl, ethylsulfonyl, n-propylsulfonyl or isopropylsulfonyl, or CO-R^{16};
in addition C_1-C_4-haloalkoxy, such as fluoromethoxy, difluoromethoxy, trifluoromethoxy, or C_1-C_4-haloalkylthio, such as fluorothiomethyl, difluorothiomethyl or trifluorothiomethyl, or C_1-C_4-alkylsulfinyl, such as methylsulfinyl, ethylsulfinyl, n-propylsulfinyl or isopropylsulfinyl;
preferably cyano, C_1-C_4-alkyl, such as methyl, ethyl, n-propyl or isopropyl, C_1-C_4-haloalkyl, such as fluoromethyl, difluoromethyl or trifluoromethyl, halogen, such as fluorine, chlorine or bromine, C_1-C_4-alkylsulfonyl, such as methylsulfonyl, ethylsulfonyl, n-propylsulfonyl or isopropylsulfonyl;
likewise preferably C_1-C_4-haloalkoxy, such as fluoromethoxy, difluoromethoxy, or trifluoromethoxy, or C_1-C_4-haloalkylthio, such as fluorothiomethyl, difluorothiomethyl or trifluorothiomethyl, or C_1-C_4-alkylsulfinyl, such as methylsulfinyl, ethylsulfinyl, n-propylsulfinyl or

isopropylsulfinyl;
particularly preferably trifluoromethyl, chlorine, bromine;
furthermore particularly preferably fluorine, fluoromethyl, difluoromethyl, fluoromethoxy, difluoromethoxy or trifluoromethoxy, fluorothiomethyl, difluorothiomethyl or trifluorothiomethyl, methylsulfonyl or methylsulfinyl;

R^{12}, R^{13} and R^{14} are hydrogen, cyano, halogen, such as fluorine, chlorine or bromine, C_1-C_4-haloalkyl, such as fluoromethyl, difluoromethyl or trifluoromethyl, C_1-C_4-alkyl, such as methyl, ethyl, n-propyl or isopropyl, C_1-C_4- alkylsulfonyl, such as methylsulfonyl, ethylsulfonyl, n-propylsulfonyl or isopropylsulfonyl, C_1-C_4-alkoxy, such as methoxy, ethoxy, n-propoxy or isopropoxy, halomethoxy, such as fluoromethoxy, difluoromethoxy or trifluoromethoxy, or CO-R^{16};
furthermore halomethylthio, such as fluorothiomethyl, difluorothiomethyl or trifluorothiomethyl;
preferably hydrogen, cyano, halogen, such as fluorine, chlorine or bromine, C_1-C_4-haloalkyl, such as fluoromethyl, difluoromethyl or trifluoromethyl, C_1-C_4-alkyl, such as methyl, ethyl, n-propyl or isopropyl, C_1-C_4-alkylsulfonyl, such as methylsulfonyl, ethylsulfonyl, n-propylsulfonyl or isopropylsulfonyl, C_1-C_4-alkoxy, such as methoxy, ethoxy, n-propoxy or isopropoxy, halomethoxy, such as fluoromethoxy, difluoromethoxy or trifluoromethoxy;
furthermore halomethylthio, such as fluorothiomethyl, difluorothiomethyl or trifluorothiomethyl;
particularly preferably hydrogen, halogen, such as fluorine or chlorine, C_1-C_4-haloalkyl, such as fluoromethyl, difluoromethyl or trifluoromethyl, C_1-C_4-alkyl, such as methyl, ethyl, n-propyl or isopropyl;
likewise particularly preferably halomethoxy, such as fluoromethoxy, difluoromethoxy or trifluoromethoxy, halomethylthio, such as fluorothiomethyl, difluorothiomethyl, or trifluorothiomethyl;

R^{12} is very particularly preferably hydrogen, cyano, fluorine, chlorine, methyl, fluoromethyl, difluoromethyl or trifluoromethyl, fluoromethoxy, difluoromethoxy, trifluoromethoxy, fluorothiomethyl, difluorothiomethyl, trifluorothiomethyl,

R^{13} is very particularly preferably hydrogen, fluorine or chlorine;

R^{14} is very particularly preferably hydrogen;

R^{15} is hydrogen; and

R^{16} is C_1-C_4-alkoxy, such as methoxy, ethoxy, n-propoxy, isopropoxy, n-butoxy or t-butoxy, C_1-C_4- alkyl, such as methyl, ethyl, n-propyl or isopropyl, C_1-alkyl, such as fluoromethyl, difluoromethyl or trifluoromethyl, or C_1-haloalkoxy, such as fluoromethoxy, difluoromethoxy or trifluoromethoxy.

Preference is also given to phenylalanine derivatives of the formula I in which the radicals

R^1, R^2, R^4 and R^5 are hydrogen, halogen, hydroxyl, mercapto, nitro, cyano, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_2-C_6-haloalkenyl, C_2-C_6-haloalkynyl, C_1-C_6-haloalkoxy, C_3-C_6-haloalkenyloxy, C_3-C_6-haloalkynyloxy, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_3-C_6-haloalkynylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_3-C_6-haloalkynylsulfinyl, C_1-C_6-haloalkylsulfonyl, C_3-C_6-haloalkenylsulfonyl, C_3-C_6-haloalkynylsulfonyl, formyl, C_1-C_6-alkylcarbonyloxy, C_1-C_6-alkoxy-C_1-C_4-alkyl, C_3-C_6-alkenyloxy-C_1-C_4-alkyl, C_3-C_4-alkynyloxy-C_1-C_4-alkyl, C_1-C_6-alkylthio-C_1-C_4-alkyl, C_3-C_6-alkenylthio-C_1-C_4-alkyl, C_3-C_4-alkynylthio-C_1-C_4-alkyl, C_1-C_6-alkylcarbonyl-C_1-C_4-alkyl, C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkyl, C_1-C_6-alkoxycarbonyl-C_1-C_4-alkyl, C_1-C_6-alkoxy-C_1-C_4-alkoxy, C_3-C_6-alkenyloxy-C_1-C_4-alkoxy, C_3-C_4-alkynyloxy-C_1-C_4-alkoxy, C_1-C_6-alkylthio-C_1-C_4-alkoxy, C_3-C_6-alkenylthio-C_1-C_4-alkoxy, C_3-C_6-alkynylthio-C_1-C_4-alkoxy, C_1-C_6-alkylcarbonyl-C_1-C_4-alkoxy, C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkoxy, C_1-C_6-alkoxycarbonyl-C_1-C_4-alkoxy or CO-R^{16};

R^3 is hydrogen, mercapto, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_2-C_6-haloalkenyl, C_2-C_6-haloalkynyl, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_3-C_6-haloalkynylthio,

C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_3-C_6-haloalkynylsulfinyl, C_1-C_6-haloalkylsulfonyl, C_3-C_6-haloalkenylsulfonyl, C_3-C_6-haloalkynylsulfonyl, C_1-C_6-alkoxy-C_1-C_4-alkyl, C_3-C_6-alkenyloxy-C_1-C_4-alkyl, C_3-C_4-alkynyloxy-C_1-C_4-alkyl, C_1-C_6-alkylthio-C_1-C_4-alkyl, C_3-C_6-alkenylthio-C_1-C_4-alkyl, C_3-C_6-alkynylthio-C_1-C_4-alkyl, C_1-C_6-alkylcarbonyl-C_1-C_4-alkyl, C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkyl, C_1-C_6-alkyloxycarbonyl-C_1-C_4-alkyl, or CO-R^{16}.

Preference is also given to phenylalanine derivatives of the formula I in which R^1, R^2, R^3, R^4 and R^5 are hydrogen.

Preference is also given to phenylalanine derivatives of the formula I in which
R^1, R^2 and R^3 in each case independentlly of one another are hydrogen, fluorine, chlorine, methyl or trifluoromethyl;

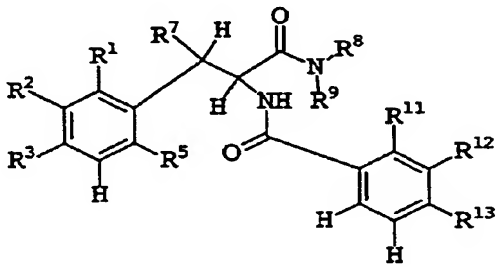
R^4, R^5, R^6, R^9, R^{10} and R^{15} are hydrogen;

R^7 is hydrogen or methyl;

R^8 is methyl;

R^{11}, R^{12}, R^{13} and R^{14} in each case independently of one another are hydrogen, bromine, methylsulfonyl, fluorine, chlorine, methyl, trifluoromethyl, difluoromethyl, methoxy, cyano, preferably H, fluorine, chlorine, methyl, trifluoromethyl, difluoromethyl, methoxy or cyano.

Particular preference is also given to phenylalanine derivatives of the formula I′ (R^4, R^6, R^{10}, R^{14} and R^{15} are hydrogen) in which



I′

R^1, R^2, R^3 , R^5 in each case independently of one another are hydrogen, fluorine, chlorine, methyl or ethyl;

R^7 is hydrogen, methyl or ethyl;

R^8 is methoxy, methyl or hydroxyl;

R^9 is hydrogen;
is methyl if R^8 is hydroxyl;

R^{11} is fluorine, chlorine, halomethyl, such as fluoromethyl, difluoromethyl, trifluoromethyl, halomethoxy, such as fluoromethoxy, difluoromethoxy, trifluoromethoxy, halothioalkyl, such as fluorothiomethyl, difluorothiomethyl, trifluorothiomethyl, methylsulfinyl or methylsulfonyl;

R^{12} is hydrogen, cyano, methyl, fluorine, chlorine, halomethyl, such as fluoromethyl, difluoromethyl, trifluoromethyl, halomethoxy, such as fluoromethoxy, difluoromethoxy, trifluoromethoxy, halothioalkyl, such as fluorothiomethyl, difluorothiomethyl, trifluorothiomethyl;

R^{13} is hydrogen, fluorine, chlorine.

In particular with a view to their use, preference is also given to the compounds I' compiled in the tables below.

Table 1:

Compounds of the formula I' (R^4, R^6, R^{10}, R^{14} and R^{15} are hydrogen) in which R^3 is H, R^5 is H, R^7 is H, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 2:

Compounds of the formula I', in which R^3 is H, R^5 is H, R^7 is H, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 3:

Compounds of the formula I', in which R^3 is H, R^5 is H, R^7 is H, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 4:

Compounds of the formula I', in which R^3 is H, R^5 is H, R^7 is H, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Tabelle 5:

Compounds of the formula I', in which R^3 is H, R^5 is H, R^7 is CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 6:

Compounds of the formula I', in which R^3 is H, R^5 is H, R^7 is CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 7:

Compounds of the formula I', in which R^3 is H, R^5 is H, R^7 is CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 8:

Compounds of the formula I', in which R^3 is H, R^5 is H, R^7 is CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 9:

Compounds of the formula I', in which R^3 is H, R^5 is H, R^7 is CH_2CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 10:

Compounds of the formula I', in which R^3 is H, R^5 is H, R^7 is CH_2CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 11:

Compounds of the formula I', in which R^3 is H, R^5 is H, R^7 is CH_2CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 12:

Compounds of the formula I', in which R^3 is H, R^5 is H, R^7 is CH_2CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 13:

Compounds of the formula I', in which R^3 is H, R^5 is F, R^7 is H, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 14:

Compounds of the formula I', in which R^3 is H, R^5 is F, R^7 is H, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 15:

Compounds of the formula I', in which R^3 is H, R^5 is F, R^7 is H, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 16:

Compounds of the formula I', in which R^3 is H, R^5 is F, R^7 is H, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 17:

Compounds of the formula I', in which R^3 is H, R^5 is F, R^7 is CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 18:

Compounds of the formula I', in which R^3 is H, R^5 is F, R^7 is CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 19:

Compounds of the formula I', in which R^3 is H, R^5 is F, R^7 is CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 20:

Compounds of the formula I', in which R^3 is H, R^5 is F, R^7 is CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 21:

Compounds of the formula I', in which R^3 is H, R^5 is F, R^7 is CH_2CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 22:

Compounds of the formula I', in which R^3 is H, R^5 is F, R^7 is CH_2CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 23:

Compounds of the formula I', in which R^3 is H, R^5 is F, R^7 is CH_2CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 24:

Compounds of the formula I', in which R^3 is H, R^5 is F, R^7 is CH_2CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 25:

Compounds of the formula I', in which R^3 is H, R^5 is Cl, R^7 is H, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 26:

Compounds of the formula I', in which R^3 is H, R^5 is Cl, R^7 is H, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 27:

Compounds of the formula I', in which R^3 is H, R^5 is Cl, R^7 is H, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 28:

Compounds of the formula I', in which R^3 is H, R^5 is Cl, R^7 is H, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 29:

Compounds of the formula I', in which R^3 is H, R^5 is Cl, R^7 is CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 30:

Compounds of the formula I', in which R^3 is H, R^5 is Cl, R^7 is CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 31:

Compounds of the formula I', in which R^3 is H, R^5 is Cl, R^7 is CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 32:

Compounds of the formula I', in which R^3 is H, R^5 is Cl, R^7 is CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 33:

Compounds of the formula I', in which R^3 is H, R^5 is Cl, R^7 is CH_2CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 34:

Compounds of the formula I', in which R^3 is H, R^5 is Cl, R^7 is CH_2CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 35:

Compounds of the formula I', in which R^3 is H, R^5 is Cl, R^7 is CH_2CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 36:

Compounds of the formula I', in which R^3 is H, R^5 is Cl, R^7 is CH_2CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 37:

Compounds of the formula I', in which R^3 is H, R^5 is CH_3, R^7 is H, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 38:

Compounds of the formula I', in which R^3 is H, R^5 is CH_3, R^7 is H, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 39:

Compounds of the formula I', in which R^3 is H, R^5 is CH_3, R^7 is H, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 40:

Compounds of the formula I', in which R^3 is H, R^5 is CH_3, R^7 is H, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 41:

Compounds of the formula I', in which R^3 is H, R^5 is CH_3, R^7 is CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 42:

Compounds of the formula I', in which R^3 is H, R^5 is CH_3, R^7 is CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 43:

Compounds of the formula I', in which R^3 is H, R^5 is CH_3, R^7 is CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 44:

Compounds of the formula I', in which R^3 is H, R^5 is CH_3, R^7 is CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 45:

Compounds of the formula I', in which R^3 is H, R^5 is CH_3, R^7 is CH_2CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 46:

Compounds of the formula I', in which R^3 is H, R^5 is CH_3, R^7 is CH_2CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 47:

Compounds of the formula I', in which R^3 is H, R^5 is CH_3, R^7 is CH_2CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 48:

Compounds of the formula I', in which R^3 is H, R^5 is CH_3, R^7 is CH_2CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 49:

Compounds of the formula I', in which R^3 is F, R^5 is H, R^7 is H, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 50:

Compounds of the formula I', in which R^3 is F, R^5 is H, R^7 is H, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 51:

Compounds of the formula I', in which R^3 is F, R^5 is H, R^7 is H, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 52:

Compounds of the formula I', in which R^3 is F, R^5 is H, R^7 is H, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 53:

Compounds of the formula I', in which R^3 is F, R^5 is H, R^7 is CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 54:

Compounds of the formula I', in which R^3 is F, R^5 is H, R^7 is CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 55:

Compounds of the formula I', in which R^3 is F, R^5 is H, R^7 is CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 56:

Compounds of the formula I', in which R^3 is F, R^5 is H, R^7 is CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 57:

Compounds of the formula I', in which R^3 is F, R^5 is H, R^7 is CH_2CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 58:

Compounds of the formula I', in which R^3 is F, R^5 is H, R^7 is CH_2CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 59:

Compounds of the formula I', in which R^3 is F, R^5 is H, R^7 is CH_2CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 60:

Compounds of the formula I', in which R^3 is F, R^5 is H, R^7 is CH_2CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 61:

Compounds of the formula I', in which R^3 is F, R^5 is F, R^7 is H, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 62:

Compounds of the formula I', in which R^3 is F, R^5 is F, R^7 is H, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 63:

Compounds of the formula I', in which R^3 is F, R^5 is F, R^7 is H, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 64:

Compounds of the formula I', in which R^3 is F, R^5 is F, R^7 is H, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 65:

Compounds of the formula I', in which R^3 is F, R^5 is F, R^7 is CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 66:

Compounds of the formula I', in which R^3 is F, R^5 is F, R^7 is CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 67:

Compounds of the formula I', in which R^3 is F, R^5 is F, R^7 is CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 68:

Compounds of the formula I', in which R^3 is F, R^5 is F, R^7 is CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 69:

Compounds of the formula I', in which R^3 is F, R^5 is F, R^7 is CH_2CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 70:

Compounds of the formula I', in which R^3 is F, R^5 is F, R^7 is CH_2CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 71:

Compounds of the formula I', in which R^3 is F, R^5 is F, R^7 is CH_2CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 72:

Compounds of the formula I', in which R^3 is F, R^5 is F, R^7 is CH_2CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 73:

Compounds of the formula I', in which R^3 is F, R^5 is Cl, R^7 is H, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 74:

Compounds of the formula I', in which R^3 is F, R^5 is Cl, R^7 is H, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 75:

Compounds of the formula I', in which R^3 is F, R^5 is Cl, R^7 is H, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 76:

Compounds of the formula I', in which R^3 is F, R^5 is Cl, R^7 is H, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 77:

Compounds of the formula I', in which R^3 is F, R^5 is Cl, R^7 is CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 78:

Compounds of the formula I', in which R^3 is F, R^5 is Cl, R^7 is CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 79:

Compounds of the formula I', in which R^3 is F, R^5 is Cl, R^7 is CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 80:

Compounds of the formula I', in which R^3 is F, R^5 is Cl, R^7 is CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 81:

Compounds of the formula I', in which R^3 is F, R^5 is Cl, R^7 is CH_2CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 82:

Compounds of the formula I', in which R^3 is F, R^5 is Cl, R^7 is CH_2CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 83:

Compounds of the formula I', in which R^3 is F, R^5 is Cl, R^7 is CH_2CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 84:

Compounds of the formula I', in which R^3 is F, R^5 is Cl, R^7 is CH_2CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 85:

Compounds of the formula I', in which R^3 is F, R^5 is CH_3, R^7 is H, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 86:

Compounds of the formula I', in which R^3 is F, R^5 is CH_3, R^7 is H, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 87:

Compounds of the formula I', in which R^3 is F, R^5 is CH_3, R^7 is H, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 88:

Compounds of the formula I', in which R^3 is F, R^5 is CH_3, R^7 is H, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 89:

Compounds of the formula I', in which R^3 is F, R^5 is CH_3, R^7 is CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 90:

Compounds of the formula I', in which R^3 is F, R^5 is CH_3, R^7 is CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 91:

Compounds of the formula I', in which R^3 is F, R^5 is CH_3, R^7 is CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 92:

Compounds of the formula I', in which R^3 is F, R^5 is CH_3, R^7 is CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 93:

Compounds of the formula I', in which R^3 is F, R^5 is CH_3, R^7 is CH_2CH_3, R^9 is H and R^8 is CH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 94:

Compounds of the formula I', in which R^3 is F, R^5 is CH_3, R^7 is CH_2CH_3, R^9 is H and R^8 is OCH_3 and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 95:

Compounds of the formula I', in which R^3 is F, R^5 is CH_3, R^7 is CH_2CH_3, R^9 is H and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 96:

Compounds of the formula I', in which R^3 is F, R^5 is CH_3, R^7 is CH_2CH_3, R^9 is CH_3 and R^8 is OH and the combination of the substituents R^1, R^2, R^{11}, R^{12} and R^{13} for a compound corresponds in each case to a row of table A.

Table 1

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1	H	H	F	H	H
A-2	F	H	F	H	H
A-3	Cl	H	F	H	H
A-4	CH_3	H	F	H	H
A-5	CH_2CH_3	H	F	H	H
A-6	H	H	Cl	H	H
A-7	F	H	Cl	H	H
A-8	Cl	H	Cl	H	H
A-9	CH_3	H	Cl	H	H
A-10	CH_2CH_3	H	Cl	H	H
A-11	H	H	CHF_2	H	H
A-12	F	H	CHF_2	H	H
A-13	Cl	H	CHF_2	H	H
A-14	CH_3	H	CHF_2	H	H
A-15	CH_2CH_3	H	CHF_2	H	H
A-16	H	H	CF_3	H	H
A-17	F	H	CF_3	H	H
A-18	Cl	H	CF_3	H	H
A-19	CH_3	H	CF_3	H	H
A-20	CH_2CH_3	H	CF_3	H	H
A-21	H	H	$SCHF_2$	H	H
A-22	F	H	$SCHF_2$	H	H
A-23	Cl	H	$SCHF_2$	H	H
A-24	CH_3	H	$SCHF_2$	H	H
A-25	CH_2CH_3	H	$SCHF_2$	H	H
A-26	H	H	SCF_3	H	H
A-27	F	H	SCF_3	H	H
A-28	Cl	H	SCF_3	H	H
A-29	CH_3	H	SCF_3	H	H
A-30	CH_2CH_3	H	SCF_3	H	H
A-31	H	H	$OCHF_2$	H	H
A-32	F	H	$OCHF_2$	H	H
A-33	Cl	H	$OCHF_2$	H	H
A-34	CH_3	H	$OCHF_2$	H	H
A-35	CH_2CH_3	H	$OCHF_2$	H	H
A-36	H	H	OCF_3	H	H
A-37	F	H	OCF_3	H	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-38	Cl	H	OCF_3	H	H
A-39	CH_3	H	OCF_3	H	H
A-40	CH_2CH_3	H	OCF_3	H	H
A-41	H	H	F	F	H
A-42	F	H	F	F	H
A-43	Cl	H	F	F	H
A-44	CH_3	H	F	F	H
A-45	CH_2CH_3	H	F	F	H
A-46	H	H	Cl	F	H
A-47	F	H	Cl	F	H
A-48	Cl	H	Cl	F	H
A-49	CH_3	H	Cl	F	H
A-50	CH_2CH_3	H	Cl	F	H
A-51	H	H	CHF_2	F	H
A-52	F	H	CHF_2	F	H
A-53	Cl	H	CHF_2	F	H
A-54	CH_3	H	CHF_2	F	H
A-55	CH_2CH_3	H	CHF_2	F	H
A-56	H	H	CF_3	F	H
A-57	F	H	CF_3	F	H
A-58	Cl	H	CF_3	F	H
A-59	CH_3	H	CF_3	F	H
A-60	CH_2CH_3	H	CF_3	F	H
A-61	H	H	$SCHF_2$	F	H
A-62	F	H	$SCHF_2$	F	H
A-63	Cl	H	$SCHF_2$	F	H
A-64	CH_3	H	$SCHF_2$	F	H
A-65	CH_2CH_3	H	$SCHF_2$	F	H
A-66	H	H	SCF_3	F	H
A-67	F	H	SCF_3	F	H
A-68	Cl	H	SCF_3	F	H
A-69	CH_3	H	SCF_3	F	H
A-70	CH_2CH_3	H	SCF_3	F	H
A-71	H	H	$OCHF_2$	F	H
A-72	F	H	$OCHF_2$	F	H
A-73	Cl	H	$OCHF_2$	F	H
A-74	CH_3	H	$OCHF_2$	F	H
A-75	CH_2CH_3	H	$OCHF_2$	F	H
A-76	H	H	OCF_3	F	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-77	F	H	OCF_3	F	H
A-78	Cl	H	OCF_3	F	H
A-79	CH_3	H	OCF_3	F	H
A-80	CH_2CH_3	H	OCF_3	F	H
A-81	H	H	F	Cl	H
A-82	F	H	F	Cl	H
A-83	Cl	H	F	Cl	H
A-84	CH_3	H	F	Cl	H
A-85	CH_2CH_3	H	F	Cl	H
A-86	H	H	Cl	Cl	H
A-87	F	H	Cl	Cl	H
A-88	Cl	H	Cl	Cl	H
A-89	CH_3	H	Cl	Cl	H
A-90	CH_2CH_3	H	Cl	Cl	H
A-91	H	H	CHF_2	Cl	H
A-92	F	H	CHF_2	Cl	H
A-93	Cl	H	CHF_2	Cl	H
A-94	CH_3	H	CHF_2	Cl	H
A-95	CH_2CH_3	H	CHF_2	Cl	H
A-96	H	H	CF_3	Cl	H
A-97	F	H	CF_3	Cl	H
A-98	Cl	H	CF_3	Cl	H
A-99	CH_3	H	CF_3	Cl	H
A-100	CH_2CH_3	H	CF_3	Cl	H
A-101	H	H	$SCHF_2$	Cl	H
A-102	F	H	$SCHF_2$	Cl	H
A-103	Cl	H	$SCHF_2$	Cl	H
A-104	CH_3	H	$SCHF_2$	Cl	H
A-105	CH_2CH_3	H	$SCHF_2$	Cl	H
A-106	H	H	SCF_3	Cl	H
A-107	F	H	SCF_3	Cl	H
A-108	Cl	H	SCF_3	Cl	H
A-109	CH_3	H	SCF_3	Cl	H
A-110	CH_2CH_3	H	SCF_3	Cl	H
A-111	H	H	$OCHF_2$	Cl	H
A-112	F	H	$OCHF_2$	Cl	H
A-113	Cl	H	$OCHF_2$	Cl	H
A-114	CH_3	H	$OCHF_2$	Cl	H
A-115	CH_2CH_3	H	$OCHF_2$	Cl	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-116	H	H	OCF_3	Cl	H
A-117	F	H	OCF_3	Cl	H
A-118	Cl	H	OCF_3	Cl	H
A-119	CH_3	H	OCF_3	Cl	H
A-120	CH_2CH_3	H	OCF_3	Cl	H
A-121	H	H	F	CHF_2	H
A-122	F	H	F	CHF_2	H
A-123	Cl	H	F	CHF_2	H
A-124	CH_3	H	F	CHF_2	H
A-125	CH_2CH_3	H	F	CHF_2	H
A-126	H	H	Cl	CHF_2	H
A-127	F	H	Cl	CHF_2	H
A-128	Cl	H	Cl	CHF_2	H
A-129	CH_3	H	Cl	CHF_2	H
A-130	CH_2CH_3	H	Cl	CHF_2	H
A-131	H	H	CHF2	CHF_2	H
A-132	F	H	CHF2	CHF_2	H
A-133	Cl	H	CHF2	CHF_2	H
A-134	CH_3	H	CHF2	CHF_2	H
A-135	CH_2CH_3	H	CHF2	CHF_2	H
A-136	H	H	CF_3	CHF_2	H
A-137	F	H	CF_3	CHF_2	H
A-138	Cl	H	CF_3	CHF_2	H
A-139	CH_3	H	CF_3	CHF_2	H
A-140	CH_2CH_3	H	CF_3	CHF_2	H
A-141	H	H	$SCHF_2$	CHF_2	H
A-142	F	H	$SCHF_2$	CHF_2	H
A-143	Cl	H	$SCHF_2$	CHF_2	H
A-144	CH_3	H	$SCHF_2$	CHF_2	H
A-145	CH_2CH_3	H	$SCHF_2$	CHF_2	H
A-146	H	H	SCF_3	CHF_2	H
A-147	F	H	SCF_3	CHF_2	H
A-148	Cl	H	SCF_3	CHF_2	H
A-149	CH_3	H	SCF_3	CHF_2	H
A-150	CH_2CH_3	H	SCF_3	CHF_2	H
A-151	H	H	$OCHF_2$	CHF_2	H
A-152	F	H	$OCHF_2$	CHF_2	H
A-153	Cl	H	$OCHF_2$	CHF_2	H
A-154	CH_3	H	$OCHF_2$	CHF_2	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-155	CH_2CH_3	H	$OCHF_2$	CHF_2	H
A-156	H	H	OCF_3	CHF_2	H
A-157	F	H	OCF_3	CHF_2	H
A-158	Cl	H	OCF_3	CHF_2	H
A-159	CH_3	H	OCF_3	CHF_2	H
A-160	CH_2CH_3	H	OCF_3	CHF_2	H
A-161	H	H	F	CF_3	H
A-162	F	H	F	CF_3	H
A-163	Cl	H	F	CF_3	H
A-164	CH_3	H	F	CF_3	H
A-165	CH_2CH_3	H	F	CF_3	H
A-166	H	H	Cl	CF_3	H
A-167	F	H	Cl	CF_3	H
A-168	Cl	H	Cl	CF_3	H
A-169	CH_3	H	Cl	CF_3	H
A-170	CH_2CH_3	H	Cl	CF_3	H
A-171	H	H	CHF2	CF_3	H
A-172	F	H	CHF2	CF_3	H
A-173	Cl	H	CHF2	CF_3	H
A-174	CH_3	H	CHF2	CF_3	H
A-175	CH_2CH_3	H	CHF2	CF_3	H
A-176	H	H	CF_3	CF_3	H
A-177	F	H	CF_3	CF_3	H
A-178	Cl	H	CF_3	CF_3	H
A-179	CH_3	H	CF_3	CF_3	H
A-180	CH_2CH_3	H	CF_3	CF_3	H
A-181	H	H	$SCHF_2$	CF_3	H
A-182	F	H	$SCHF_2$	CF_3	H
A-183	Cl	H	$SCHF_2$	CF_3	H
A-184	CH_3	H	$SCHF_2$	CF_3	H
A-185	CH_2CH_3	H	$SCHF_2$	CF_3	H
A-186	H	H	SCF_3	CF_3	H
A-187	F	H	SCF_3	CF_3	H
A-188	Cl	H	SCF_3	CF_3	H
A-189	CH_3	H	SCF_3	CF_3	H
A-190	CH_2CH_3	H	SCF_3	CF_3	H
A-191	H	H	$OCHF_2$	CF_3	H
A-192	F	H	$OCHF_2$	CF_3	H
A-193	Cl	H	$OCHF_2$	CF_3	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-194	CH_3	H	$OCHF_2$	CF_3	H
A-195	CH_2CH_3	H	$OCHF_2$	CF_3	H
A-196	H	H	OCF_3	CF_3	H
A-197	F	H	OCF_3	CF_3	H
A-198	Cl	H	OCF_3	CF_3	H
A-199	CH_3	H	OCF_3	CF_3	H
A-200	CH_2CH_3	H	OCF_3	CF_3	H
A-201	H	H	F	H	F
A-202	F	H	F	H	F
A-203	Cl	H	F	H	F
A-204	CH_3	H	F	H	F
A-205	CH_2CH_3	H	F	H	F
A-206	H	H	Cl	H	F
A-207	F	H	Cl	H	F
A-208	Cl	H	Cl	H	F
A-209	CH_3	H	Cl	H	F
A-210	CH_2CH_3	H	Cl	H	F
A-211	H	H	CHF2	H	F
A-212	F	H	CHF2	H	F
A-213	Cl	H	CHF2	H	F
A-214	CH_3	H	CHF2	H	F
A-215	CH_2CH_3	H	CHF2	H	F
A-216	H	H	CF_3	H	F
A-217	F	H	CF_3	H	F
A-218	Cl	H	CF_3	H	F
A-219	CH_3	H	CF_3	H	F
A-220	CH_2CH_3	H	CF_3	H	F
A-221	H	H	$SCHF_2$	H	F
A-222	F	H	$SCHF_2$	H	F
A-223	Cl	H	$SCHF_2$	H	F
A-224	CH_3	H	$SCHF_2$	H	F
A-225	CH_2CH_3	H	$SCHF_2$	H	F
A-226	H	H	SCF_3	H	F
A-227	F	H	SCF_3	H	F
A-228	Cl	H	SCF_3	H	F
A-229	CH_3	H	SCF_3	H	F
A-230	CH_2CH_3	H	SCF_3	H	F
A-231	H	H	$OCHF_2$	H	F
A-232	F	H	$OCHF_2$	H	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-233	Cl	H	$OCHF_2$	H	F
A-234	CH_3	H	$OCHF_2$	H	F
A-235	CH_2CH_3	H	$OCHF_2$	H	F
A-236	H	H	OCF_3	H	F
A-237	F	H	OCF_3	H	F
A-238	Cl	H	OCF_3	H	F
A-239	CH_3	H	OCF_3	H	F
A-240	CH_2CH_3	H	OCF_3	H	F
A-241	H	H	F	F	F
A-242	F	H	F	F	F
A-243	Cl	H	F	F	F
A-244	CH_3	H	F	F	F
A-245	CH_2CH_3	H	F	F	F
A-246	H	H	Cl	F	F
A-247	F	H	Cl	F	F
A-248	Cl	H	Cl	F	F
A-249	CH_3	H	Cl	F	F
A-250	CH_2CH_3	H	Cl	F	F
A-251	H	H	CHF2	F	F
A-252	F	H	CHF2	F	F
A-253	Cl	H	CHF2	F	F
A-254	CH_3	H	CHF2	F	F
A-255	CH_2CH_3	H	CHF2	F	F
A-256	H	H	CF_3	F	F
A-257	F	H	CF_3	F	F
A-258	Cl	H	CF_3	F	F
A-259	CH_3	H	CF_3	F	F
A-260	CH_2CH_3	H	CF_3	F	F
A-261	H	H	$SCHF_2$	F	F
A-262	F	H	$SCHF_2$	F	F
A-263	Cl	H	$SCHF_2$	F	F
A-264	CH_3	H	$SCHF_2$	F	F
A-265	CH_2CH_3	H	$SCHF_2$	F	F
A-266	H	H	SCF_3	F	F
A-267	F	H	SCF_3	F	F
A-268	Cl	H	SCF_3	F	F
A-269	CH_3	H	SCF_3	F	F
A-270	CH_2CH_3	H	SCF_3	F	F
A-271	H	H	$OCHF_2$	F	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-272	F	H	$OCHF_2$	F	F
A-273	Cl	H	$OCHF_2$	F	F
A-274	CH_3	H	$OCHF_2$	F	F
A-275	CH_2CH_3	H	$OCHF_2$	F	F
A-276	H	H	OCF_3	F	F
A-277	F	H	OCF_3	F	F
A-278	Cl	H	OCF_3	F	F
A-279	CH_3	H	OCF_3	F	F
A-280	CH_2CH_3	H	OCF_3	F	F
A-281	H	H	F	Cl	F
A-282	F	H	F	Cl	F
A-283	Cl	H	F	Cl	F
A-284	CH_3	H	F	Cl	F
A-285	CH_2CH_3	H	F	Cl	F
A-286	H	H	Cl	Cl	F
A-287	F	H	Cl	Cl	F
A-288	Cl	H	Cl	Cl	F
A-289	CH_3	H	Cl	Cl	F
A-290	CH_2CH_3	H	Cl	Cl	F
A-291	H	H	CHF2	Cl	F
A-292	F	H	CHF2	Cl	F
A-293	Cl	H	CHF2	Cl	F
A-294	CH_3	H	CHF2	Cl	F
A-295	CH_2CH_3	H	CHF2	Cl	F
A-296	H	H	CF_3	Cl	F
A-297	F	H	CF_3	Cl	F
A-298	Cl	H	CF_3	Cl	F
A-299	CH_3	H	CF_3	Cl	F
A-300	CH_2CH_3	H	CF_3	Cl	F
A-301	H	H	$SCHF_2$	Cl	F
A-302	F	H	$SCHF_2$	Cl	F
A-303	Cl	H	$SCHF_2$	Cl	F
A-304	CH_3	H	$SCHF_2$	Cl	F
A-305	CH_2CH_3	H	$SCHF_2$	Cl	F
A-306	H	H	SCF_3	Cl	F
A-307	F	H	SCF_3	Cl	F
A-308	Cl	H	SCF_3	Cl	F
A-309	CH_3	H	SCF_3	Cl	F
A-310	CH_2CH_3	H	SCF_3	Cl	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-311	H	H	$OCHF_2$	Cl	F
A-312	F	H	$OCHF_2$	Cl	F
A-313	Cl	H	$OCHF_2$	Cl	F
A-314	CH_3	H	$OCHF_2$	Cl	F
A-315	CH_2CH_3	H	$OCHF_2$	Cl	F
A-316	H	H	OCF_3	Cl	F
A-317	F	H	OCF_3	Cl	F
A-318	Cl	H	OCF_3	Cl	F
A-319	CH_3	H	OCF_3	Cl	F
A-320	CH_2CH_3	H	OCF_3	Cl	F
A-321	H	H	F	CHF_2	F
A-322	F	H	F	CHF_2	F
A-323	Cl	H	F	CHF_2	F
A-324	CH_3	H	F	CHF_2	F
A-325	CH_2CH_3	H	F	CHF_2	F
A-326	H	H	Cl	CHF_2	F
A-327	F	H	Cl	CHF_2	F
A-328	Cl	H	Cl	CHF_2	F
A-329	CH_3	H	Cl	CHF_2	F
A-330	CH_2CH_3	H	Cl	CHF_2	F
A-331	H	H	CHF2	CHF_2	F
A-332	F	H	CHF2	CHF_2	F
A-333	Cl	H	CHF2	CHF_2	F
A-334	CH_3	H	CHF2	CHF_2	F
A-335	CH_2CH_3	H	CHF2	CHF_2	F
A-336	H	H	CF_3	CHF_2	F
A-337	F	H	CF_3	CHF_2	F
A-338	Cl	H	CF_3	CHF_2	F
A-339	CH_3	H	CF_3	CHF_2	F
A-340	CH_2CH_3	H	CF_3	CHF_2	F
A-341	H	H	$SCHF_2$	CHF_2	F
A-342	F	H	$SCHF_2$	CHF_2	F
A-343	Cl	H	$SCHF_2$	CHF_2	F
A-344	CH_3	H	$SCHF_2$	CHF_2	F
A-345	CH_2CH_3	H	$SCHF_2$	CHF_2	F
A-346	H	H	SCF_3	CHF_2	F
A-347	F	H	SCF_3	CHF_2	F
A-348	Cl	H	SCF_3	CHF_2	F
A-349	CH_3	H	SCF_3	CHF_2	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-350	CH_2CH_3	H	SCF_3	CHF_2	F
A-351	H	H	$OCHF_2$	CHF_2	F
A-352	F	H	$OCHF_2$	CHF_2	F
A-353	Cl	H	$OCHF_2$	CHF_2	F
A-354	CH_3	H	$OCHF_2$	CHF_2	F
A-355	CH_2CH_3	H	$OCHF_2$	CHF_2	F
A-356	H	H	OCF_3	CHF_2	F
A-357	F	H	OCF_3	CHF_2	F
A-358	Cl	H	OCF_3	CHF_2	F
A-359	CH_3	H	OCF_3	CHF_2	F
A-360	CH_2CH_3	H	OCF_3	CHF_2	F
A-361	H	H	F	CF_3	F
A-362	F	H	F	CF_3	F
A-363	Cl	H	F	CF_3	F
A-364	CH_3	H	F	CF_3	F
A-365	CH_2CH_3	H	F	CF_3	F
A-366	H	H	Cl	CF_3	F
A-367	F	H	Cl	CF_3	F
A-368	Cl	H	Cl	CF_3	F
A-369	CH_3	H	Cl	CF_3	F
A-370	CH_2CH_3	H	Cl	CF_3	F
A-371	H	H	CHF2	CF_3	F
A-372	F	H	CHF2	CF_3	F
A-373	Cl	H	CHF2	CF_3	F
A-374	CH_3	H	CHF2	CF_3	F
A-375	CH_2CH_3	H	CHF2	CF_3	F
A-376	H	H	CF_3	CF_3	F
A-377	F	H	CF_3	CF_3	F
A-378	Cl	H	CF_3	CF_3	F
A-379	CH_3	H	CF_3	CF_3	F
A-380	CH_2CH_3	H	CF_3	CF_3	F
A-381	H	H	$SCHF_2$	CF_3	F
A-382	F	H	$SCHF_2$	CF_3	F
A-383	Cl	H	$SCHF_2$	CF_3	F
A-384	CH_3	H	$SCHF_2$	CF_3	F
A-385	CH_2CH_3	H	$SCHF_2$	CF_3	F
A-386	H	H	SCF_3	CF_3	F
A-387	F	H	SCF_3	CF_3	F
A-388	Cl	H	SCF_3	CF_3	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-389	CH_3	H	SCF_3	CF_3	F
A-390	CH_2CH_3	H	SCF_3	CF_3	F
A-391	H	H	$OCHF_2$	CF_3	F
A-392	F	H	$OCHF_2$	CF_3	F
A-393	Cl	H	$OCHF_2$	CF_3	F
A-394	CH_3	H	$OCHF_2$	CF_3	F
A-395	CH_2CH_3	H	$OCHF_2$	CF_3	F
A-396	H	H	OCF_3	CF_3	F
A-397	F	H	OCF_3	CF_3	F
A-398	Cl	H	OCF_3	CF_3	F
A-399	CH_3	H	OCF_3	CF_3	F
A-400	CH_2CH_3	H	OCF_3	CF_3	F
A-401	H	H	F	H	Cl
A-402	F	H	F	H	Cl
A-403	Cl	H	F	H	Cl
A-404	CH_3	H	F	H	Cl
A-405	CH_2CH_3	H	F	H	Cl
A-406	H	H	Cl	H	Cl
A-407	F	H	Cl	H	Cl
A-408	Cl	H	Cl	H	Cl
A-409	CH_3	H	Cl	H	Cl
A-410	CH_2CH_3	H	Cl	H	Cl
A-411	H	H	CHF2	H	Cl
A-412	F	H	CHF2	H	Cl
A-413	Cl	H	CHF2	H	Cl
A-414	CH_3	H	CHF2	H	Cl
A-415	CH_2CH_3	H	CHF2	H	Cl
A-416	H	H	CF_3	H	Cl
A-417	F	H	CF_3	H	Cl
A-418	Cl	H	CF_3	H	Cl
A-419	CH_3	H	CF_3	H	Cl
A-420	CH_2CH_3	H	CF_3	H	Cl
A-421	H	H	$SCHF_2$	H	Cl
A-422	F	H	$SCHF_2$	H	Cl
A-423	Cl	H	$SCHF_2$	H	Cl
A-424	CH_3	H	$SCHF_2$	H	Cl
A-425	CH_2CH_3	H	$SCHF_2$	H	Cl
A-426	H	H	SCF_3	H	Cl
A-427	F	H	SCF_3	H	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-428	Cl	H	SCF_3	H	Cl
A-429	CH_3	H	SCF_3	H	Cl
A-430	CH_2CH_3	H	SCF_3	H	Cl
A-431	H	H	$OCHF_2$	H	Cl
A-432	F	H	$OCHF_2$	H	Cl
A-433	Cl	H	$OCHF_2$	H	Cl
A-434	CH_3	H	$OCHF_2$	H	Cl
A-435	CH_2CH_3	H	$OCHF_2$	H	Cl
A-436	H	H	OCF_3	H	Cl
A-437	F	H	OCF_3	H	Cl
A-438	Cl	H	OCF_3	H	Cl
A-439	CH_3	H	OCF_3	H	Cl
A-440	CH_2CH_3	H	OCF_3	H	Cl
A-441	H	H	F	F	Cl
A-442	F	H	F	F	Cl
A-443	Cl	H	F	F	Cl
A-444	CH_3	H	F	F	Cl
A-445	CH_2CH_3	H	F	F	Cl
A-446	H	H	Cl	F	Cl
A-447	F	H	Cl	F	Cl
A-448	Cl	H	Cl	F	Cl
A-449	CH_3	H	Cl	F	Cl
A-450	CH_2CH_3	H	Cl	F	Cl
A-451	H	H	CHF2	F	Cl
A-452	F	H	CHF2	F	Cl
A-453	Cl	H	CHF2	F	Cl
A-454	CH_3	H	CHF2	F	Cl
A-455	CH_2CH_3	H	CHF2	F	Cl
A-456	H	H	CF_3	F	Cl
A-457	F	H	CF_3	F	Cl
A-458	Cl	H	CF_3	F	Cl
A-459	CH_3	H	CF_3	F	Cl
A-460	CH_2CH_3	H	CF_3	F	Cl
A-461	H	H	$SCHF_2$	F	Cl
A-462	F	H	$SCHF_2$	F	Cl
A-463	Cl	H	$SCHF_2$	F	Cl
A-464	CH_3	H	$SCHF_2$	F	Cl
A-465	CH_2CH_3	H	$SCHF_2$	F	Cl
A-466	H	H	SCF_3	F	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-467	F	H	SCF_3	F	Cl
A-468	Cl	H	SCF_3	F	Cl
A-469	CH_3	H	SCF_3	F	Cl
A-470	CH_2CH_3	H	SCF_3	F	Cl
A-471	H	H	$OCHF_2$	F	Cl
A-472	F	H	$OCHF_2$	F	Cl
A-473	Cl	H	$OCHF_2$	F	Cl
A-474	CH_3	H	$OCHF_2$	F	Cl
A-475	CH_2CH_3	H	$OCHF_2$	F	Cl
A-476	H	H	OCF_3	F	Cl
A-477	F	H	OCF_3	F	Cl
A-478	Cl	H	OCF_3	F	Cl
A-479	CH_3	H	OCF_3	F	Cl
A-480	CH_2CH_3	H	OCF_3	F	Cl
A-481	H	H	F	Cl	Cl
A-482	F	H	F	Cl	Cl
A-483	Cl	H	F	Cl	Cl
A-484	CH_3	H	F	Cl	Cl
A-485	CH_2CH_3	H	F	Cl	Cl
A-486	H	H	Cl	Cl	Cl
A-487	F	H	Cl	Cl	Cl
A-488	Cl	H	Cl	Cl	Cl
A-489	CH_3	H	Cl	Cl	Cl
A-490	CH_2CH_3	H	Cl	Cl	Cl
A-491	H	H	CHF2	Cl	Cl
A-492	F	H	CHF2	Cl	Cl
A-493	Cl	H	CHF2	Cl	Cl
A-494	CH_3	H	CHF2	Cl	Cl
A-495	CH_2CH_3	H	CHF2	Cl	Cl
A-496	H	H	CF_3	Cl	Cl
A-497	F	H	CF_3	Cl	Cl
A-498	Cl	H	CF_3	Cl	Cl
A-499	CH_3	H	CF_3	Cl	Cl
A-500	CH_2CH_3	H	CF_3	Cl	Cl
A-501	H	H	$SCHF_2$	Cl	Cl
A-502	F	H	$SCHF_2$	Cl	Cl
A-503	Cl	H	$SCHF_2$	Cl	Cl
A-504	CH_3	H	$SCHF_2$	Cl	Cl
A-505	CH_2CH_3	H	$SCHF_2$	Cl	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-506	H	H	SCF_3	Cl	Cl
A-507	F	H	SCF_3	Cl	Cl
A-508	Cl	H	SCF_3	Cl	Cl
A-509	CH_3	H	SCF_3	Cl	Cl
A-510	CH_2CH_3	H	SCF_3	Cl	Cl
A-511	H	H	$OCHF_2$	Cl	Cl
A-512	F	H	$OCHF_2$	Cl	Cl
A-513	Cl	H	$OCHF_2$	Cl	Cl
A-514	CH_3	H	$OCHF_2$	Cl	Cl
A-515	CH_2CH_3	H	$OCHF_2$	Cl	Cl
A-516	H	H	OCF_3	Cl	Cl
A-517	F	H	OCF_3	Cl	Cl
A-518	Cl	H	OCF_3	Cl	Cl
A-519	CH_3	H	OCF_3	Cl	Cl
A-520	CH_2CH_3	H	OCF_3	Cl	Cl
A-521	H	H	F	CHF_2	Cl
A-522	F	H	F	CHF_2	Cl
A-523	Cl	H	F	CHF_2	Cl
A-524	CH_3	H	F	CHF_2	Cl
A-525	CH_2CH_3	H	F	CHF_2	Cl
A-526	H	H	Cl	CHF_2	Cl
A-527	F	H	Cl	CHF_2	Cl
A-528	Cl	H	Cl	CHF_2	Cl
A-529	CH_3	H	Cl	CHF_2	Cl
A-530	CH_2CH_3	H	Cl	CHF_2	Cl
A-531	H	H	CHF2	CHF_2	Cl
A-532	F	H	CHF2	CHF_2	Cl
A-533	Cl	H	CHF2	CHF_2	Cl
A-534	CH_3	H	CHF2	CHF_2	Cl
A-535	CH_2CH_3	H	CHF2	CHF_2	Cl
A-536	H	H	CF_3	CHF_2	Cl
A-537	F	H	CF_3	CHF_2	Cl
A-538	Cl	H	CF_3	CHF_2	Cl
A-539	CH_3	H	CF_3	CHF_2	Cl
A-540	CH_2CH_3	H	CF_3	CHF_2	Cl
A-541	H	H	$SCHF_2$	CHF_2	Cl
A-542	F	H	$SCHF_2$	CHF_2	Cl
A-543	Cl	H	$SCHF_2$	CHF_2	Cl
A-544	CH_3	H	$SCHF_2$	CHF_2	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-545	CH_2CH_3	H	$SCHF_2$	CHF_2	Cl
A-546	H	H	SCF_3	CHF_2	Cl
A-547	F	H	SCF_3	CHF_2	Cl
A-548	Cl	H	SCF_3	CHF_2	Cl
A-549	CH_3	H	SCF_3	CHF_2	Cl
A-550	CH_2CH_3	H	SCF_3	CHF_2	Cl
A-551	H	H	$OCHF_2$	CHF_2	Cl
A-552	F	H	$OCHF_2$	CHF_2	Cl
A-553	Cl	H	$OCHF_2$	CHF_2	Cl
A-554	CH_3	H	$OCHF_2$	CHF_2	Cl
A-555	CH_2CH_3	H	$OCHF_2$	CHF_2	Cl
A-556	H	H	OCF_3	CHF_2	Cl
A-557	F	H	OCF_3	CHF_2	Cl
A-558	Cl	H	OCF_3	CHF_2	Cl
A-559	CH_3	H	OCF_3	CHF_2	Cl
A-560	CH_2CH_3	H	OCF_3	CHF_2	Cl
A-561	H	H	F	CF_3	Cl
A-562	F	H	F	CF_3	Cl
A-563	Cl	H	F	CF_3	Cl
A-564	CH_3	H	F	CF_3	Cl
A-565	CH_2CH_3	H	F	CF_3	Cl
A-566	H	H	Cl	CF_3	Cl
A-567	F	H	Cl	CF_3	Cl
A-568	Cl	H	Cl	CF_3	Cl
A-569	CH_3	H	Cl	CF_3	Cl
A-570	CH_2CH_3	H	Cl	CF_3	Cl
A-571	H	H	CHF2	CF_3	Cl
A-572	F	H	CHF2	CF_3	Cl
A-573	Cl	H	CHF2	CF_3	Cl
A-574	CH_3	H	CHF2	CF_3	Cl
A-575	CH_2CH_3	H	CHF2	CF_3	Cl
A-576	H	H	CF_3	CF_3	Cl
A-577	F	H	CF_3	CF_3	Cl
A-578	Cl	H	CF_3	CF_3	Cl
A-579	CH_3	H	CF_3	CF_3	Cl
A-580	CH_2CH_3	H	CF_3	CF_3	Cl
A-581	H	H	$SCHF_2$	CF_3	Cl
A-582	F	H	$SCHF_2$	CF_3	Cl
A-583	Cl	H	$SCHF_2$	CF_3	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-584	CH_3	H	$SCHF_2$	CF_3	Cl
A-585	CH_2CH_3	H	$SCHF_2$	CF_3	Cl
A-586	H	H	SCF_3	CF_3	Cl
A-587	F	H	SCF_3	CF_3	Cl
A-588	Cl	H	SCF_3	CF_3	Cl
A-589	CH_3	H	SCF_3	CF_3	Cl
A-590	CH_2CH_3	H	SCF_3	CF_3	Cl
A-591	H	H	$OCHF_2$	CF_3	Cl
A-592	F	H	$OCHF_2$	CF_3	Cl
A-593	Cl	H	$OCHF_2$	CF_3	Cl
A-594	CH_3	H	$OCHF_2$	CF_3	Cl
A-595	CH_2CH_3	H	$OCHF_2$	CF_3	Cl
A-596	H	H	OCF_3	CF_3	Cl
A-597	F	H	OCF_3	CF_3	Cl
A-598	Cl	H	OCF_3	CF_3	Cl
A-599	CH_3	H	OCF_3	CF_3	Cl
A-600	CH_2CH_3	H	OCF_3	CF_3	Cl
A-601	H	F	F	H	H
A-602	F	F	F	H	H
A-603	Cl	F	F	H	H
A-604	CH_3	F	F	H	H
A-605	CH_2CH_3	F	F	H	H
A-606	H	F	Cl	H	H
A-607	F	F	Cl	H	H
A-608	Cl	F	Cl	H	H
A-609	CH_3	F	Cl	H	H
A-610	CH_2CH_3	F	Cl	H	H
A-611	H	F	CHF2	H	H
A-612	F	F	CHF2	H	H
A-613	Cl	F	CHF2	H	H
A-614	CH_3	F	CHF2	H	H
A-615	CH_2CH_3	F	CHF2	H	H
A-616	H	F	CF_3	H	H
A-617	F	F	CF_3	H	H
A-618	Cl	F	CF_3	H	H
A-619	CH_3	F	CF_3	H	H
A-620	CH_2CH_3	F	CF_3	H	H
A-621	H	F	$SCHF_2$	H	H
A-622	F	F	$SCHF_2$	H	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-623	Cl	F	$SCHF_2$	H	H
A-624	CH_3	F	$SCHF_2$	H	H
A-625	CH_2CH_3	F	$SCHF_2$	H	H
A-626	H	F	SCF_3	H	H
A-627	F	F	SCF_3	H	H
A-628	Cl	F	SCF_3	H	H
A-629	CH_3	F	SCF_3	H	H
A-630	CH_2CH_3	F	SCF_3	H	H
A-631	H	F	$OCHF_2$	H	H
A-632	F	F	$OCHF_2$	H	H
A-633	Cl	F	$OCHF_2$	H	H
A-634	CH_3	F	$OCHF_2$	H	H
A-635	CH_2CH_3	F	$OCHF_2$	H	H
A-636	H	F	OCF_3	H	H
A-637	F	F	OCF_3	H	H
A-638	Cl	F	OCF_3	H	H
A-639	CH_3	F	OCF_3	H	H
A-640	CH_2CH_3	F	OCF_3	H	H
A-641	H	F	F	F	H
A-642	F	F	F	F	H
A-643	Cl	F	F	F	H
A-644	CH_3	F	F	F	H
A-645	CH_2CH_3	F	F	F	H
A-646	H	F	Cl	F	H
A-647	F	F	Cl	F	H
A-648	Cl	F	Cl	F	H
A-649	CH_3	F	Cl	F	H
A-650	CH_2CH_3	F	Cl	F	H
A-651	H	F	CHF2	F	H
A-652	F	F	CHF2	F	H
A-653	Cl	F	CHF2	F	H
A-654	CH_3	F	CHF2	F	H
A-655	CH_2CH_3	F	CHF2	F	H
A-656	H	F	CF_3	F	H
A-657	F	F	CF_3	F	H
A-658	Cl	F	CF_3	F	H
A-659	CH_3	F	CF_3	F	H
A-660	CH_2CH_3	F	CF_3	F	H
A-661	H	F	$SCHF_2$	F	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-662	F	F	$SCHF_2$	F	H
A-663	Cl	F	$SCHF_2$	F	H
A-664	CH_3	F	$SCHF_2$	F	H
A-665	CH_2CH_3	F	$SCHF_2$	F	H
A-666	H	F	SCF_3	F	H
A-667	F	F	SCF_3	F	H
A-668	Cl	F	SCF_3	F	H
A-669	CH_3	F	SCF_3	F	H
A-670	CH_2CH_3	F	SCF_3	F	H
A-671	H	F	$OCHF_2$	F	H
A-672	F	F	$OCHF_2$	F	H
A-673	Cl	F	$OCHF_2$	F	H
A-674	CH_3	F	$OCHF_2$	F	H
A-675	CH_2CH_3	F	$OCHF_2$	F	H
A-676	H	F	OCF_3	F	H
A-677	F	F	OCF_3	F	H
A-678	Cl	F	OCF_3	F	H
A-679	CH_3	F	OCF_3	F	H
A-680	CH_2CH_3	F	OCF_3	F	H
A-681	H	F	F	Cl	H
A-682	F	F	F	Cl	H
A-683	Cl	F	F	Cl	H
A-684	CH_3	F	F	Cl	H
A-685	CH_2CH_3	F	F	Cl	H
A-686	H	F	Cl	Cl	H
A-687	F	F	Cl	Cl	H
A-688	Cl	F	Cl	Cl	H
A-689	CH_3	F	Cl	Cl	H
A-690	CH_2CH_3	F	Cl	Cl	H
A-691	H	F	CHF2	Cl	H
A-692	F	F	CHF2	Cl	H
A-693	Cl	F	CHF2	Cl	H
A-694	CH_3	F	CHF2	Cl	H
A-695	CH_2CH_3	F	CHF2	Cl	H
A-696	H	F	CF_3	Cl	H
A-697	F	F	CF_3	Cl	H
A-698	Cl	F	CF_3	Cl	H
A-699	CH_3	F	CF_3	Cl	H
A-700	CH_2CH_3	F	CF_3	Cl	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-701	H	F	$SCHF_2$	Cl	H
A-702	F	F	$SCHF_2$	Cl	H
A-703	Cl	F	$SCHF_2$	Cl	H
A-704	CH_3	F	$SCHF_2$	Cl	H
A-705	CH_2CH_3	F	$SCHF_2$	Cl	H
A-706	H	F	SCF_3	Cl	H
A-707	F	F	SCF_3	Cl	H
A-708	Cl	F	SCF_3	Cl	H
A-709	CH_3	F	SCF_3	Cl	H
A-710	CH_2CH_3	F	SCF_3	Cl	H
A-711	H	F	$OCHF_2$	Cl	H
A-712	F	F	$OCHF_2$	Cl	H
A-713	Cl	F	$OCHF_2$	Cl	H
A-714	CH_3	F	$OCHF_2$	Cl	H
A-715	CH_2CH_3	F	$OCHF_2$	Cl	H
A-716	H	F	OCF_3	Cl	H
A-717	F	F	OCF_3	Cl	H
A-718	Cl	F	OCF_3	Cl	H
A-719	CH_3	F	OCF_3	Cl	H
A-720	CH_2CH_3	F	OCF_3	Cl	H
A-721	H	F	F	CHF_2	H
A-722	F	F	F	CHF_2	H
A-723	Cl	F	F	CHF_2	H
A-724	CH_3	F	F	CHF_2	H
A-725	CH_2CH_3	F	F	CHF_2	H
A-726	H	F	Cl	CHF_2	H
A-727	F	F	Cl	CHF_2	H
A-728	Cl	F	Cl	CHF_2	H
A-729	CH_3	F	Cl	CHF_2	H
A-730	CH_2CH_3	F	Cl	CHF_2	H
A-731	H	F	CHF2	CHF_2	H
A-732	F	F	CHF2	CHF_2	H
A-733	Cl	F	CHF2	CHF_2	H
A-734	CH_3	F	CHF2	CHF_2	H
A-735	CH_2CH_3	F	CHF2	CHF_2	H
A-736	H	F	CF_3	CHF_2	H
A-737	F	F	CF_3	CHF_2	H
A-738	Cl	F	CF_3	CHF_2	H
A-739	CH_3	F	CF_3	CHF_2	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-740	CH_2CH_3	F	CF_3	CHF_2	H
A-741	H	F	$SCHF_2$	CHF_2	H
A-742	F	F	$SCHF_2$	CHF_2	H
A-743	Cl	F	$SCHF_2$	CHF_2	H
A-744	CH_3	F	$SCHF_2$	CHF_2	H
A-745	CH_2CH_3	F	$SCHF_2$	CHF_2	H
A-746	H	F	SCF_3	CHF_2	H
A-747	F	F	SCF_3	CHF_2	H
A-748	Cl	F	SCF_3	CHF_2	H
A-749	CH_3	F	SCF_3	CHF_2	H
A-750	CH_2CH_3	F	SCF_3	CHF_2	H
A-751	H	F	$OCHF_2$	CHF_2	H
A-752	F	F	$OCHF_2$	CHF_2	H
A-753	Cl	F	$OCHF_2$	CHF_2	H
A-754	CH_3	F	$OCHF_2$	CHF_2	H
A-755	CH_2CH_3	F	$OCHF_2$	CHF_2	H
A-756	H	F	OCF_3	CHF_2	H
A-757	F	F	OCF_3	CHF_2	H
A-758	Cl	F	OCF_3	CHF_2	H
A-759	CH_3	F	OCF_3	CHF_2	H
A-760	CH_2CH_3	F	OCF_3	CHF_2	H
A-761	H	F	F	CF_3	H
A-762	F	F	F	CF_3	H
A-763	Cl	F	F	CF_3	H
A-764	CH_3	F	F	CF_3	H
A-765	CH_2CH_3	F	F	CF_3	H
A-766	H	F	Cl	CF_3	H
A-767	F	F	Cl	CF_3	H
A-768	Cl	F	Cl	CF_3	H
A-769	CH_3	F	Cl	CF_3	H
A-770	CH_2CH_3	F	Cl	CF_3	H
A-771	H	F	CHF2	CF_3	H
A-772	F	F	CHF2	CF_3	H
A-773	Cl	F	CHF2	CF_3	H
A-774	CH_3	F	CHF2	CF_3	H
A-775	CH_2CH_3	F	CHF2	CF_3	H
A-776	H	F	CF_3	CF_3	H
A-777	F	F	CF_3	CF_3	H
A-778	Cl	F	CF_3	CF_3	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-779	CH_3	F	CF_3	CF_3	H
A-780	CH_2CH_3	F	CF_3	CF_3	H
A-781	H	F	$SCHF_2$	CF_3	H
A-782	F	F	$SCHF_2$	CF_3	H
A-783	Cl	F	$SCHF_2$	CF_3	H
A-784	CH_3	F	$SCHF_2$	CF_3	H
A-785	CH_2CH_3	F	$SCHF_2$	CF_3	H
A-786	H	F	SCF_3	CF_3	H
A-787	F	F	SCF_3	CF_3	H
A-788	Cl	F	SCF_3	CF_3	H
A-789	CH_3	F	SCF_3	CF_3	H
A-790	CH_2CH_3	F	SCF_3	CF_3	H
A-791	H	F	$OCHF_2$	CF_3	H
A-792	F	F	$OCHF_2$	CF_3	H
A-793	Cl	F	$OCHF_2$	CF_3	H
A-794	CH_3	F	$OCHF_2$	CF_3	H
A-795	CH_2CH_3	F	$OCHF_2$	CF_3	H
A-796	H	F	OCF_3	CF_3	H
A-797	F	F	OCF_3	CF_3	H
A-798	Cl	F	OCF_3	CF_3	H
A-799	CH_3	F	OCF_3	CF_3	H
A-800	CH_2CH_3	F	OCF_3	CF_3	H
A-801	H	F	F	H	F
A-802	F	F	F	H	F
A-803	Cl	F	F	H	F
A-804	CH_3	F	F	H	F
A-805	CH_2CH_3	F	F	H	F
A-806	H	F	Cl	H	F
A-807	F	F	Cl	H	F
A-808	Cl	F	Cl	H	F
A-809	CH_3	F	Cl	H	F
A-810	CH_2CH_3	F	Cl	H	F
A-811	H	F	CHF2	H	F
A-812	F	F	CHF2	H	F
A-813	Cl	F	CHF2	H	F
A-814	CH_3	F	CHF2	H	F
A-815	CH_2CH_3	F	CHF2	H	F
A-816	H	F	CF_3	H	F
A-817	F	F	CF_3	H	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-818	Cl	F	CF_3	H	F
A-819	CH_3	F	CF_3	H	F
A-820	CH_2CH_3	F	CF_3	H	F
A-821	H	F	$SCHF_2$	H	F
A-822	F	F	$SCHF_2$	H	F
A-823	Cl	F	$SCHF_2$	H	F
A-824	CH_3	F	$SCHF_2$	H	F
A-825	CH_2CH_3	F	$SCHF_2$	H	F
A-826	H	F	SCF_3	H	F
A-827	F	F	SCF_3	H	F
A-828	Cl	F	SCF_3	H	F
A-829	CH_3	F	SCF_3	H	F
A-830	CH_2CH_3	F	SCF_3	H	F
A-831	H	F	$OCHF_2$	H	F
A-832	F	F	$OCHF_2$	H	F
A-833	Cl	F	$OCHF_2$	H	F
A-834	CH_3	F	$OCHF_2$	H	F
A-835	CH_2CH_3	F	$OCHF_2$	H	F
A-836	H	F	OCF_3	H	F
A-837	F	F	OCF_3	H	F
A-838	Cl	F	OCF_3	H	F
A-839	CH_3	F	OCF_3	H	F
A-840	CH_2CH_3	F	OCF_3	H	F
A-841	H	F	F	F	F
A-842	F	F	F	F	F
A-843	Cl	F	F	F	F
A-844	CH_3	F	F	F	F
A-845	CH_2CH_3	F	F	F	F
A-846	H	F	Cl	F	F
A-847	F	F	Cl	F	F
A-848	Cl	F	Cl	F	F
A-849	CH_3	F	Cl	F	F
A-850	CH_2CH_3	F	Cl	F	F
A-851	H	F	CHF2	F	F
A-852	F	F	CHF2	F	F
A-853	Cl	F	CHF2	F	F
A-854	CH_3	F	CHF2	F	F
A-855	CH_2CH_3	F	CHF2	F	F
A-856	H	F	CF_3	F	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-857	F	F	CF_3	F	F
A-858	Cl	F	CF_3	F	F
A-859	CH_3	F	CF_3	F	F
A-860	CH_2CH_3	F	CF_3	F	F
A-861	H	F	$SCHF_2$	F	F
A-862	F	F	$SCHF_2$	F	F
A-863	Cl	F	$SCHF_2$	F	F
A-864	CH_3	F	$SCHF_2$	F	F
A-865	CH_2CH_3	F	$SCHF_2$	F	F
A-866	H	F	SCF_3	F	F
A-867	F	F	SCF_3	F	F
A-868	Cl	F	SCF_3	F	F
A-869	CH_3	F	SCF_3	F	F
A-870	CH_2CH_3	F	SCF_3	F	F
A-871	H	F	$OCHF_2$	F	F
A-872	F	F	$OCHF_2$	F	F
A-873	Cl	F	$OCHF_2$	F	F
A-874	CH_3	F	$OCHF_2$	F	F
A-875	CH_2CH_3	F	$OCHF_2$	F	F
A-876	H	F	OCF_3	F	F
A-877	F	F	OCF_3	F	F
A-878	Cl	F	OCF_3	F	F
A-879	CH_3	F	OCF_3	F	F
A-880	CH_2CH_3	F	OCF_3	F	F
A-881	H	F	F	Cl	F
A-882	F	F	F	Cl	F
A-883	Cl	F	F	Cl	F
A-884	CH_3	F	F	Cl	F
A-885	CH_2CH_3	F	F	Cl	F
A-886	H	F	Cl	Cl	F
A-887	F	F	Cl	Cl	F
A-888	Cl	F	Cl	Cl	F
A-889	CH_3	F	Cl	Cl	F
A-890	CH_2CH_3	F	Cl	Cl	F
A-891	H	F	CHF2	Cl	F
A-892	F	F	CHF2	Cl	F
A-893	Cl	F	CHF2	Cl	F
A-894	CH_3	F	CHF2	Cl	F
A-895	CH_2CH_3	F	CHF2	Cl	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-896	H	F	CF_3	Cl	F
A-897	F	F	CF_3	Cl	F
A-898	Cl	F	CF_3	Cl	F
A-899	CH_3	F	CF_3	Cl	F
A-900	CH_2CH_3	F	CF_3	Cl	F
A-901	H	F	$SCHF_2$	Cl	F
A-902	F	F	$SCHF_2$	Cl	F
A-903	Cl	F	$SCHF_2$	Cl	F
A-904	CH_3	F	$SCHF_2$	Cl	F
A-905	CH_2CH_3	F	$SCHF_2$	Cl	F
A-906	H	F	SCF_3	Cl	F
A-907	F	F	SCF_3	Cl	F
A-908	Cl	F	SCF_3	Cl	F
A-909	CH_3	F	SCF_3	Cl	F
A-910	CH_2CH_3	F	SCF_3	Cl	F
A-911	H	F	$OCHF_2$	Cl	F
A-912	F	F	$OCHF_2$	Cl	F
A-913	Cl	F	$OCHF_2$	Cl	F
A-914	CH_3	F	$OCHF_2$	Cl	F
A-915	CH_2CH_3	F	$OCHF_2$	Cl	F
A-916	H	F	OCF_3	Cl	F
A-917	F	F	OCF_3	Cl	F
A-918	Cl	F	OCF_3	Cl	F
A-919	CH_3	F	OCF_3	Cl	F
A-920	CH_2CH_3	F	OCF_3	Cl	F
A-921	H	F	F	CHF_2	F
A-922	F	F	F	CHF_2	F
A-923	Cl	F	F	CHF_2	F
A-924	CH_3	F	F	CHF_2	F
A-925	CH_2CH_3	F	F	CHF_2	F
A-926	H	F	Cl	CHF_2	F
A-927	F	F	Cl	CHF_2	F
A-928	Cl	F	Cl	CHF_2	F
A-929	CH_3	F	Cl	CHF_2	F
A-930	CH_2CH_3	F	Cl	CHF_2	F
A-931	H	F	CHF2	CHF_2	F
A-932	F	F	CHF2	CHF_2	F
A-933	Cl	F	CHF2	CHF_2	F
A-934	CH_3	F	CHF2	CHF_2	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-935	CH_2CH_3	F	CHF2	CHF_2	F
A-936	H	F	CF_3	CHF_2	F
A-937	F	F	CF_3	CHF_2	F
A-938	Cl	F	CF_3	CHF_2	F
A-939	CH_3	F	CF_3	CHF_2	F
A-940	CH_2CH_3	F	CF_3	CHF_2	F
A-941	H	F	$SCHF_2$	CHF_2	F
A-942	F	F	$SCHF_2$	CHF_2	F
A-943	Cl	F	$SCHF_2$	CHF_2	F
A-944	CH_3	F	$SCHF_2$	CHF_2	F
A-945	CH_2CH_3	F	$SCHF_2$	CHF_2	F
A-946	H	F	SCF_3	CHF_2	F
A-947	F	F	SCF_3	CHF_2	F
A-948	Cl	F	SCF_3	CHF_2	F
A-949	CH_3	F	SCF_3	CHF_2	F
A-950	CH_2CH_3	F	SCF_3	CHF_2	F
A-951	H	F	$OCHF_2$	CHF_2	F
A-952	F	F	$OCHF_2$	CHF_2	F
A-953	Cl	F	$OCHF_2$	CHF_2	F
A-954	CH_3	F	$OCHF_2$	CHF_2	F
A-955	CH_2CH_3	F	$OCHF_2$	CHF_2	F
A-956	H	F	OCF_3	CHF_2	F
A-957	F	F	OCF_3	CHF_2	F
A-958	Cl	F	OCF_3	CHF_2	F
A-959	CH_3	F	OCF_3	CHF_2	F
A-960	CH_2CH_3	F	OCF_3	CHF_2	F
A-961	H	F	F	CF_3	F
A-962	F	F	F	CF_3	F
A-963	Cl	F	F	CF_3	F
A-964	CH_3	F	F	CF_3	F
A-965	CH_2CH_3	F	F	CF_3	F
A-966	H	F	Cl	CF_3	F
A-967	F	F	Cl	CF_3	F
A-968	Cl	F	Cl	CF_3	F
A-969	CH_3	F	Cl	CF_3	F
A-970	CH_2CH_3	F	Cl	CF_3	F
A-971	H	F	CHF2	CF_3	F
A-972	F	F	CHF2	CF_3	F
A-973	Cl	F	CHF2	CF_3	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-974	CH_3	F	CHF2	CF_3	F
A-975	CH_2CH_3	F	CHF2	CF_3	F
A-976	H	F	CF_3	CF_3	F
A-977	F	F	CF_3	CF_3	F
A-978	Cl	F	CF_3	CF_3	F
A-979	CH_3	F	CF_3	CF_3	F
A-980	CH_2CH_3	F	CF_3	CF_3	F
A-981	H	F	$SCHF_2$	CF_3	F
A-982	F	F	$SCHF_2$	CF_3	F
A-983	Cl	F	$SCHF_2$	CF_3	F
A-984	CH_3	F	$SCHF_2$	CF_3	F
A-985	CH_2CH_3	F	$SCHF_2$	CF_3	F
A-986	H	F	SCF_3	CF_3	F
A-987	F	F	SCF_3	CF_3	F
A-988	Cl	F	SCF_3	CF_3	F
A-989	CH_3	F	SCF_3	CF_3	F
A-990	CH_2CH_3	F	SCF_3	CF_3	F
A-991	H	F	$OCHF_2$	CF_3	F
A-992	F	F	$OCHF_2$	CF_3	F
A-993	Cl	F	$OCHF_2$	CF_3	F
A-994	CH_3	F	$OCHF_2$	CF_3	F
A-995	CH_2CH_3	F	$OCHF_2$	CF_3	F
A-996	H	F	OCF_3	CF_3	F
A-997	F	F	OCF_3	CF_3	F
A-998	Cl	F	OCF_3	CF_3	F
A-999	CH_3	F	OCF_3	CF_3	F
A-1000	CH_2CH_3	F	OCF_3	CF_3	F
A-1001	H	F	F	H	Cl
A-1002	F	F	F	H	Cl
A-1003	Cl	F	F	H	Cl
A-1004	CH_3	F	F	H	Cl
A-1005	CH_2CH_3	F	F	H	Cl
A-1006	H	F	Cl	H	Cl
A-1007	F	F	Cl	H	Cl
A-1008	Cl	F	Cl	H	Cl
A-1009	CH_3	F	Cl	H	Cl
A-1010	CH_2CH_3	F	Cl	H	Cl
A-1011	H	F	CHF2	H	Cl
A-1012	F	F	CHF2	H	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1013	Cl	F	CHF2	H	Cl
A-1014	CH_3	F	CHF2	H	Cl
A-1015	CH_2CH_3	F	CHF2	H	Cl
A-1016	H	F	CF_3	H	Cl
A-1017	F	F	CF_3	H	Cl
A-1018	Cl	F	CF_3	H	Cl
A-1019	CH_3	F	CF_3	H	Cl
A-1020	CH_2CH_3	F	CF_3	H	Cl
A-1021	H	F	$SCHF_2$	H	Cl
A-1022	F	F	$SCHF_2$	H	Cl
A-1023	Cl	F	$SCHF_2$	H	Cl
A-1024	CH_3	F	$SCHF_2$	H	Cl
A-1025	CH_2CH_3	F	$SCHF_2$	H	Cl
A-1026	H	F	SCF_3	H	Cl
A-1027	F	F	SCF_3	H	Cl
A-1028	Cl	F	SCF_3	H	Cl
A-1029	CH_3	F	SCF_3	H	Cl
A-1030	CH_2CH_3	F	SCF_3	H	Cl
A-1031	H	F	$OCHF_2$	H	Cl
A-1032	F	F	$OCHF_2$	H	Cl
A-1033	Cl	F	$OCHF_2$	H	Cl
A-1034	CH_3	F	$OCHF_2$	H	Cl
A-1035	CH_2CH_3	F	$OCHF_2$	H	Cl
A-1036	H	F	OCF_3	H	Cl
A-1037	F	F	OCF_3	H	Cl
A-1038	Cl	F	OCF_3	H	Cl
A-1039	CH_3	F	OCF_3	H	Cl
A-1040	CH_2CH_3	F	OCF_3	H	Cl
A-1041	H	F	F	F	Cl
A-1042	F	F	F	F	Cl
A-1043	Cl	F	F	F	Cl
A-1044	CH_3	F	F	F	Cl
A-1045	CH_2CH_3	F	F	F	Cl
A-1046	H	F	Cl	F	Cl
A-1047	F	F	Cl	F	Cl
A-1048	Cl	F	Cl	F	Cl
A-1049	CH_3	F	Cl	F	Cl
A-1050	CH_2CH_3	F	Cl	F	Cl
A-1051	H	F	CHF2	F	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1052	F	F	CHF2	F	Cl
A-1053	Cl	F	CHF2	F	Cl
A-1054	CH_3	F	CHF2	F	Cl
A-1055	CH_2CH_3	F	CHF2	F	Cl
A-1056	H	F	CF_3	F	Cl
A-1057	F	F	CF_3	F	Cl
A-1058	Cl	F	CF_3	F	Cl
A-1059	CH_3	F	CF_3	F	Cl
A-1060	CH_2CH_3	F	CF_3	F	Cl
A-1061	H	F	$SCHF_2$	F	Cl
A-1062	F	F	$SCHF_2$	F	Cl
A-1063	Cl	F	$SCHF_2$	F	Cl
A-1064	CH_3	F	$SCHF_2$	F	Cl
A-1065	CH_2CH_3	F	$SCHF_2$	F	Cl
A-1066	H	F	SCF_3	F	Cl
A-1067	F	F	SCF_3	F	Cl
A-1068	Cl	F	SCF_3	F	Cl
A-1069	CH_3	F	SCF_3	F	Cl
A-1070	CH_2CH_3	F	SCF_3	F	Cl
A-1071	H	F	$OCHF_2$	F	Cl
A-1072	F	F	$OCHF_2$	F	Cl
A-1073	Cl	F	$OCHF_2$	F	Cl
A-1074	CH_3	F	$OCHF_2$	F	Cl
A-1075	CH_2CH_3	F	$OCHF_2$	F	Cl
A-1076	H	F	OCF_3	F	Cl
A-1077	F	F	OCF_3	F	Cl
A-1078	Cl	F	OCF_3	F	Cl
A-1079	CH_3	F	OCF_3	F	Cl
A-1080	CH_2CH_3	F	OCF_3	F	Cl
A-1081	H	F	F	Cl	Cl
A-1082	F	F	F	Cl	Cl
A-1083	Cl	F	F	Cl	Cl
A-1084	CH_3	F	F	Cl	Cl
A-1085	CH_2CH_3	F	F	Cl	Cl
A-1086	H	F	Cl	Cl	Cl
A-1087	F	F	Cl	Cl	Cl
A-1088	Cl	F	Cl	Cl	Cl
A-1089	CH_3	F	Cl	Cl	Cl
A-1090	CH_2CH_3	F	Cl	Cl	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1091	H	F	CHF2	Cl	Cl
A-1092	F	F	CHF2	Cl	Cl
A-1093	Cl	F	CHF2	Cl	Cl
A-1094	CH_3	F	CHF2	Cl	Cl
A-1095	CH_2CH_3	F	CHF2	Cl	Cl
A-1096	H	F	CF_3	Cl	Cl
A-1097	F	F	CF_3	Cl	Cl
A-1098	Cl	F	CF_3	Cl	Cl
A-1099	CH_3	F	CF_3	Cl	Cl
A-1100	CH_2CH_3	F	CF_3	Cl	Cl
A-1101	H	F	$SCHF_2$	Cl	Cl
A-1102	F	F	$SCHF_2$	Cl	Cl
A-1103	Cl	F	$SCHF_2$	Cl	Cl
A-1104	CH_3	F	$SCHF_2$	Cl	Cl
A-1105	CH_2CH_3	F	$SCHF_2$	Cl	Cl
A-1106	H	F	SCF_3	Cl	Cl
A-1107	F	F	SCF_3	Cl	Cl
A-1108	Cl	F	SCF_3	Cl	Cl
A-1109	CH_3	F	SCF_3	Cl	Cl
A-1110	CH_2CH_3	F	SCF_3	Cl	Cl
A-1111	H	F	$OCHF_2$	Cl	Cl
A-1112	F	F	$OCHF_2$	Cl	Cl
A-1113	Cl	F	$OCHF_2$	Cl	Cl
A-1114	CH_3	F	$OCHF_2$	Cl	Cl
A-1115	CH_2CH_3	F	$OCHF_2$	Cl	Cl
A-1116	H	F	OCF_3	Cl	Cl
A-1117	F	F	OCF_3	Cl	Cl
A-1118	Cl	F	OCF_3	Cl	Cl
A-1119	CH_3	F	OCF_3	Cl	Cl
A-1120	CH_2CH_3	F	OCF_3	Cl	Cl
A-1121	H	F	F	CHF_2	Cl
A-1122	F	F	F	CHF_2	Cl
A-1123	Cl	F	F	CHF_2	Cl
A-1124	CH_3	F	F	CHF_2	Cl
A-1125	CH_2CH_3	F	F	CHF_2	Cl
A-1126	H	F	Cl	CHF_2	Cl
A-1127	F	F	Cl	CHF_2	Cl
A-1128	Cl	F	Cl	CHF_2	Cl
A-1129	CH_3	F	Cl	CHF_2	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1130	CH_2CH_3	F	Cl	CHF_2	Cl
A-1131	H	F	CHF2	CHF_2	Cl
A-1132	F	F	CHF2	CHF_2	Cl
A-1133	Cl	F	CHF2	CHF_2	Cl
A-1134	CH_3	F	CHF2	CHF_2	Cl
A-1135	CH_2CH_3	F	CHF2	CHF_2	Cl
A-1136	H	F	CF_3	CHF_2	Cl
A-1137	F	F	CF_3	CHF_2	Cl
A-1138	Cl	F	CF_3	CHF_2	Cl
A-1139	CH_3	F	CF_3	CHF_2	Cl
A-1140	CH_2CH_3	F	CF_3	CHF_2	Cl
A-1141	H	F	$SCHF_2$	CHF_2	Cl
A-1142	F	F	$SCHF_2$	CHF_2	Cl
A-1143	Cl	F	$SCHF_2$	CHF_2	Cl
A-1144	CH_3	F	$SCHF_2$	CHF_2	Cl
A-1145	CH_2CH_3	F	$SCHF_2$	CHF_2	Cl
A-1146	H	F	SCF_3	CHF_2	Cl
A-1147	F	F	SCF_3	CHF_2	Cl
A-1148	Cl	F	SCF_3	CHF_2	Cl
A-1149	CH_3	F	SCF_3	CHF_2	Cl
A-1150	CH_2CH_3	F	SCF_3	CHF_2	Cl
A-1151	H	F	$OCHF_2$	CHF_2	Cl
A-1152	F	F	$OCHF_2$	CHF_2	Cl
A-1153	Cl	F	$OCHF_2$	CHF_2	Cl
A-1154	CH_3	F	$OCHF_2$	CHF_2	Cl
A-1155	CH_2CH_3	F	$OCHF_2$	CHF_2	Cl
A-1156	H	F	OCF_3	CHF_2	Cl
A-1157	F	F	OCF_3	CHF_2	Cl
A-1158	Cl	F	OCF_3	CHF_2	Cl
A-1159	CH_3	F	OCF_3	CHF_2	Cl
A-1160	CH_2CH_3	F	OCF_3	CHF_2	Cl
A-1161	H	F	F	CF_3	Cl
A-1162	F	F	F	CF_3	Cl
A-1163	Cl	F	F	CF_3	Cl
A-1164	CH_3	F	F	CF_3	Cl
A-1165	CH_2CH_3	F	F	CF_3	Cl
A-1166	H	F	Cl	CF_3	Cl
A-1167	F	F	Cl	CF_3	Cl
A-1168	Cl	F	Cl	CF_3	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1169	CH_3	F	Cl	CF_3	Cl
A-1170	CH_2CH_3	F	Cl	CF_3	Cl
A-1171	H	F	CHF2	CF_3	Cl
A-1172	F	F	CHF2	CF_3	Cl
A-1173	Cl	F	CHF2	CF_3	Cl
A-1174	CH_3	F	CHF2	CF_3	Cl
A-1175	CH_2CH_3	F	CHF2	CF_3	Cl
A-1176	H	F	CF_3	CF_3	Cl
A-1177	F	F	CF_3	CF_3	Cl
A-1178	Cl	F	CF_3	CF_3	Cl
A-1179	CH_3	F	CF_3	CF_3	Cl
A-1180	CH_2CH_3	F	CF_3	CF_3	Cl
A-1181	H	F	$SCHF_2$	CF_3	Cl
A-1182	F	F	$SCHF_2$	CF_3	Cl
A-1183	Cl	F	$SCHF_2$	CF_3	Cl
A-1184	CH_3	F	$SCHF_2$	CF_3	Cl
A-1185	CH_2CH_3	F	$SCHF_2$	CF_3	Cl
A-1186	H	F	SCF_3	CF_3	Cl
A-1187	F	F	SCF_3	CF_3	Cl
A-1188	Cl	F	SCF_3	CF_3	Cl
A-1189	CH_3	F	SCF_3	CF_3	Cl
A-1190	CH_2CH_3	F	SCF_3	CF_3	Cl
A-1191	H	F	$OCHF_2$	CF_3	Cl
A-1192	F	F	$OCHF_2$	CF_3	Cl
A-1193	Cl	F	$OCHF_2$	CF_3	Cl
A-1194	CH_3	F	$OCHF_2$	CF_3	Cl
A-1195	CH_2CH_3	F	$OCHF_2$	CF_3	Cl
A-1196	H	F	OCF_3	CF_3	Cl
A-1197	F	F	OCF_3	CF_3	Cl
A-1198	Cl	F	OCF_3	CF_3	Cl
A-1199	CH_3	F	OCF_3	CF_3	Cl
A-1200	CH_2CH_3	F	OCF_3	CF_3	Cl
A-1201	H	Cl	F	H	H
A-1202	F	Cl	F	H	H
A-1203	Cl	Cl	F	H	H
A-1204	CH_3	Cl	F	H	H
A-1205	CH_2CH_3	Cl	F	H	H
A-1206	H	Cl	Cl	H	H
A-1207	F	Cl	Cl	H	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1208	Cl	Cl	Cl	H	H
A-1209	CH_3	Cl	Cl	H	H
A-1210	CH_2CH_3	Cl	Cl	H	H
A-1211	H	Cl	CHF2	H	H
A-1212	F	Cl	CHF2	H	H
A-1213	Cl	Cl	CHF2	H	H
A-1214	CH_3	Cl	CHF2	H	H
A-1215	CH_2CH_3	Cl	CHF2	H	H
A-1216	H	Cl	CF_3	H	H
A-1217	F	Cl	CF_3	H	H
A-1218	Cl	Cl	CF_3	H	H
A-1219	CH_3	Cl	CF_3	H	H
A-1220	CH_2CH_3	Cl	CF_3	H	H
A-1221	H	Cl	$SCHF_2$	H	H
A-1222	F	Cl	$SCHF_2$	H	H
A-1223	Cl	Cl	$SCHF_2$	H	H
A-1224	CH_3	Cl	$SCHF_2$	H	H
A-1225	CH_2CH_3	Cl	$SCHF_2$	H	H
A-1226	H	Cl	SCF_3	H	H
A-1227	F	Cl	SCF_3	H	H
A-1228	Cl	Cl	SCF_3	H	H
A-1229	CH_3	Cl	SCF_3	H	H
A-1230	CH_2CH_3	Cl	SCF_3	H	H
A-1231	H	Cl	$OCHF_2$	H	H
A-1232	F	Cl	$OCHF_2$	H	H
A-1233	Cl	Cl	$OCHF_2$	H	H
A-1234	CH_3	Cl	$OCHF_2$	H	H
A-1235	CH_2CH_3	Cl	$OCHF_2$	H	H
A-1236	H	Cl	OCF_3	H	H
A-1237	F	Cl	OCF_3	H	H
A-1238	Cl	Cl	OCF_3	H	H
A-1239	CH_3	Cl	OCF_3	H	H
A-1240	CH_2CH_3	Cl	OCF_3	H	H
A-1241	H	Cl	F	F	H
A-1242	F	Cl	F	F	H
A-1243	Cl	Cl	F	F	H
A-1244	CH_3	Cl	F	F	H
A-1245	CH_2CH_3	Cl	F	F	H
A-1246	H	Cl	Cl	F	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1247	F	Cl	Cl	F	H
A-1248	Cl	Cl	Cl	F	H
A-1249	CH_3	Cl	Cl	F	H
A-1250	CH_2CH_3	Cl	Cl	F	H
A-1251	H	Cl	CHF2	F	H
A-1252	F	Cl	CHF2	F	H
A-1253	Cl	Cl	CHF2	F	H
A-1254	CH_3	Cl	CHF2	F	H
A-1255	CH_2CH_3	Cl	CHF2	F	H
A-1256	H	Cl	CF_3	F	H
A-1257	F	Cl	CF_3	F	H
A-1258	Cl	Cl	CF_3	F	H
A-1259	CH_3	Cl	CF_3	F	H
A-1260	CH_2CH_3	Cl	CF_3	F	H
A-1261	H	Cl	$SCHF_2$	F	H
A-1262	F	Cl	$SCHF_2$	F	H
A-1263	Cl	Cl	$SCHF_2$	F	H
A-1264	CH_3	Cl	$SCHF_2$	F	H
A-1265	CH_2CH_3	Cl	$SCHF_2$	F	H
A-1266	H	Cl	SCF_3	F	H
A-1267	F	Cl	SCF_3	F	H
A-1268	Cl	Cl	SCF_3	F	H
A-1269	CH_3	Cl	SCF_3	F	H
A-1270	CH_2CH_3	Cl	SCF_3	F	H
A-1271	H	Cl	$OCHF_2$	F	H
A-1272	F	Cl	$OCHF_2$	F	H
A-1273	Cl	Cl	$OCHF_2$	F	H
A-1274	CH_3	Cl	$OCHF_2$	F	H
A-1275	CH_2CH_3	Cl	$OCHF_2$	F	H
A-1276	H	Cl	OCF_3	F	H
A-1277	F	Cl	OCF_3	F	H
A-1278	Cl	Cl	OCF_3	F	H
A-1279	CH_3	Cl	OCF_3	F	H
A-1280	CH_2CH_3	Cl	OCF_3	F	H
A-1281	H	Cl	F	Cl	H
A-1282	F	Cl	F	Cl	H
A-1283	Cl	Cl	F	Cl	H
A-1284	CH_3	Cl	F	Cl	H
A-1285	CH_2CH_3	Cl	F	Cl	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1286	H	Cl	Cl	Cl	H
A-1287	F	Cl	Cl	Cl	H
A-1288	Cl	Cl	Cl	Cl	H
A-1289	CH_3	Cl	Cl	Cl	H
A-1290	CH_2CH_3	Cl	Cl	Cl	H
A-1291	H	Cl	CHF2	Cl	H
A-1292	F	Cl	CHF2	Cl	H
A-1293	Cl	Cl	CHF2	Cl	H
A-1294	CH_3	Cl	CHF2	Cl	H
A-1295	CH_2CH_3	Cl	CHF2	Cl	H
A-1296	H	Cl	CF_3	Cl	H
A-1297	F	Cl	CF_3	Cl	H
A-1298	Cl	Cl	CF_3	Cl	H
A-1299	CH_3	Cl	CF_3	Cl	H
A-1300	CH_2CH_3	Cl	CF_3	Cl	H
A-1301	H	Cl	$SCHF_2$	Cl	H
A-1302	F	Cl	$SCHF_2$	Cl	H
A-1303	Cl	Cl	$SCHF_2$	Cl	H
A-1304	CH_3	Cl	$SCHF_2$	Cl	H
A-1305	CH_2CH_3	Cl	$SCHF_2$	Cl	H
A-1306	H	Cl	SCF_3	Cl	H
A-1307	F	Cl	SCF_3	Cl	H
A-1308	Cl	Cl	SCF_3	Cl	H
A-1309	CH_3	Cl	SCF_3	Cl	H
A-1310	CH_2CH_3	Cl	SCF_3	Cl	H
A-1311	H	Cl	$OCHF_2$	Cl	H
A-1312	F	Cl	$OCHF_2$	Cl	H
A-1313	Cl	Cl	$OCHF_2$	Cl	H
A-1314	CH_3	Cl	$OCHF_2$	Cl	H
A-1315	CH_2CH_3	Cl	$OCHF_2$	Cl	H
A-1316	H	Cl	OCF_3	Cl	H
A-1317	F	Cl	OCF_3	Cl	H
A-1318	Cl	Cl	OCF_3	Cl	H
A-1319	CH_3	Cl	OCF_3	Cl	H
A-1320	CH_2CH_3	Cl	OCF_3	Cl	H
A-1321	H	Cl	F	CHF_2	H
A-1322	F	Cl	F	CHF_2	H
A-1323	Cl	Cl	F	CHF_2	H
A-1324	CH_3		F	CHF_2	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1325	CH_2CH_3	Cl	F	CHF_2	H
A-1326	H	Cl	Cl	CHF_2	H
A-1327	F	Cl	Cl	CHF_2	H
A-1328	Cl	Cl	Cl	CHF_2	H
A-1329	CH_3	Cl	Cl	CHF_2	H
A-1330	CH_2CH_3	Cl	Cl	CHF_2	H
A-1331	H	Cl	CHF2	CHF_2	H
A-1332	F	Cl	CHF2	CHF_2	H
A-1333	Cl	Cl	CHF2	CHF_2	H
A-1334	CH_3	Cl	CHF2	CHF_2	H
A-1335	CH_2CH_3	Cl	CHF2	CHF_2	H
A-1336	H	Cl	CF_3	CHF_2	H
A-1337	F	Cl	CF_3	CHF_2	H
A-1338	Cl	Cl	CF_3	CHF_2	H
A-1339	CH_3	Cl	CF_3	CHF_2	H
A-1340	CH_2CH_3	Cl	CF_3	CHF_2	H
A-1341	H	Cl	$SCHF_2$	CHF_2	H
A-1342	F	Cl	$SCHF_2$	CHF_2	H
A-1343	Cl	Cl	$SCHF_2$	CHF_2	H
A-1344	CH_3	Cl	$SCHF_2$	CHF_2	H
A-1345	CH_2CH_3	Cl	$SCHF_2$	CHF_2	H
A-1346	H	Cl	SCF_3	CHF_2	H
A-1347	F	Cl	SCF_3	CHF_2	H
A-1348	Cl	Cl	SCF_3	CHF_2	H
A-1349	CH_3	Cl	SCF_3	CHF_2	H
A-1350	CH_2CH_3	Cl	SCF_3	CHF_2	H
A-1351	H	Cl	$OCHF_2$	CHF_2	H
A-1352	F	Cl	$OCHF_2$	CHF_2	H
A-1353	Cl	Cl	$OCHF_2$	CHF_2	H
A-1354	CH_3	Cl	$OCHF_2$	CHF_2	H
A-1355	CH_2CH_3	Cl	$OCHF_2$	CHF_2	H
A-1356	H	Cl	OCF_3	CHF_2	H
A-1357	F	Cl	OCF_3	CHF_2	H
A-1358	Cl	Cl	OCF_3	CHF_2	H
A-1359	CH_3	Cl	OCF_3	CHF_2	H
A-1360	CH_2CH_3	Cl	OCF_3	CHF_2	H
A-1361	H	Cl	F	CF_3	H
A-1362	F	Cl	F	CF_3	H
A-1363	Cl	Cl	F	CF_3	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1364	CH_3	Cl	F	CF_3	H
A-1365	CH_2CH_3	Cl	F	CF_3	H
A-1366	H	Cl	Cl	CF_3	H
A-1367	F	Cl	Cl	CF_3	H
A-1368	Cl	Cl	Cl	CF_3	H
A-1369	CH_3	Cl	Cl	CF_3	H
A-1370	CH_2CH_3	Cl	Cl	CF_3	H
A-1371	H	Cl	CHF2	CF_3	H
A-1372	F	Cl	CHF2	CF_3	H
A-1373	Cl	Cl	CHF2	CF_3	H
A-1374	CH_3	Cl	CHF2	CF_3	H
A-1375	CH_2CH_3	Cl	CHF2	CF_3	H
A-1376	H	Cl	CF_3	CF_3	H
A-1377	F	Cl	CF_3	CF_3	H
A-1378	Cl	Cl	CF_3	CF_3	H
A-1379	CH_3	Cl	CF_3	CF_3	H
A-1380	CH_2CH_3	Cl	CF_3	CF_3	H
A-1381	H	Cl	$SCHF_2$	CF_3	H
A-1382	F	Cl	$SCHF_2$	CF_3	H
A-1383	Cl	Cl	$SCHF_2$	CF_3	H
A-1384	CH_3	Cl	$SCHF_2$	CF_3	H
A-1385	CH_2CH_3	Cl	$SCHF_2$	CF_3	H
A-1386	H	Cl	SCF_3	CF_3	H
A-1387	F	Cl	SCF_3	CF_3	H
A-1388	Cl	Cl	SCF_3	CF_3	H
A-1389	CH_3	Cl	SCF_3	CF_3	H
A-1390	CH_2CH_3	Cl	SCF_3	CF_3	H
A-1391	H	Cl	$OCHF_2$	CF_3	H
A-1392	F	Cl	$OCHF_2$	CF_3	H
A-1393	Cl	Cl	$OCHF_2$	CF_3	H
A-1394	CH_3	Cl	$OCHF_2$	CF_3	H
A-1395	CH_2CH_3	Cl	$OCHF_2$	CF_3	H
A-1396	H	Cl	OCF_3	CF_3	H
A-1397	F	Cl	OCF_3	CF_3	H
A-1398	Cl	Cl	OCF_3	CF_3	H
A-1399	CH_3	Cl	OCF_3	CF_3	H
A-1400	CH_2CH_3	Cl	OCF_3	CF_3	H
A-1401	H	Cl	F	H	F
A-1402	F		F	H	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1403	Cl	Cl	F	H	F
A-1404	CH_3	Cl	F	H	F
A-1405	CH_2CH_3	Cl	F	H	F
A-1406	H	Cl	Cl	H	F
A-1407	F	Cl	Cl	H	F
A-1408	Cl	Cl	Cl	H	F
A-1409	CH_3	Cl	Cl	H	F
A-1410	CH_2CH_3	Cl	Cl	H	F
A-1411	H	Cl	CHF2	H	F
A-1412	F	Cl	CHF2	H	F
A-1413	Cl	Cl	CHF2	H	F
A-1414	CH_3	Cl	CHF2	H	F
A-1415	CH_2CH_3	Cl	CHF2	H	F
A-1416	H	Cl	CF_3	H	F
A-1417	F	Cl	CF_3	H	F
A-1418	Cl	Cl	CF_3	H	F
A-1419	CH_3	Cl	CF_3	H	F
A-1420	CH_2CH_3	Cl	CF_3	H	F
A-1421	H	Cl	$SCHF_2$	H	F
A-1422	F	Cl	$SCHF_2$	H	F
A-1423	Cl	Cl	$SCHF_2$	H	F
A-1424	CH_3	Cl	$SCHF_2$	H	F
A-1425	CH_2CH_3	Cl	$SCHF_2$	H	F
A-1426	H	Cl	SCF_3	H	F
A-1427	F	Cl	SCF_3	H	F
A-1428	Cl	Cl	SCF_3	H	F
A-1429	CH_3	Cl	SCF_3	H	F
A-1430	CH_2CH_3	Cl	SCF_3	H	F
A-1431	H	Cl	$OCHF_2$	H	F
A-1432	F	Cl	$OCHF_2$	H	F
A-1433	Cl	Cl	$OCHF_2$	H	F
A-1434	CH_3	Cl	$OCHF_2$	H	F
A-1435	CH_2CH_3	Cl	$OCHF_2$	H	F
A-1436	H	Cl	OCF_3	H	F
A-1437	F	Cl	OCF_3	H	F
A-1438	Cl	Cl	OCF_3	H	F
A-1439	CH_3	Cl	OCF_3	H	F
A-1440	CH_2CH_3	Cl	OCF_3	H	F
A-1441	H	Cl	F	F	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1442	F	Cl	F	F	F
A-1443	Cl	Cl	F	F	F
A-1444	CH_3	Cl	F	F	F
A-1445	CH_2CH_3	Cl	F	F	F
A-1446	H	Cl	Cl	F	F
A-1447	F	Cl	Cl	F	F
A-1448	Cl	Cl	Cl	F	F
A-1449	CH_3	Cl	Cl	F	F
A-1450	CH_2CH_3	Cl	Cl	F	F
A-1451	H	Cl	CHF2	F	F
A-1452	F	Cl	CHF2	F	F
A-1453	Cl	Cl	CHF2	F	F
A-1454	CH_3	Cl	CHF2	F	F
A-1455	CH_2CH_3	Cl	CHF2	F	F
A-1456	H	Cl	CF_3	F	F
A-1457	F	Cl	CF_3	F	F
A-1458	Cl	Cl	CF_3	F	F
A-1459	CH_3	Cl	CF_3	F	F
A-1460	CH_2CH_3	Cl	CF_3	F	F
A-1461	H	Cl	$SCHF_2$	F	F
A-1462	F	Cl	$SCHF_2$	F	F
A-1463	Cl	Cl	$SCHF_2$	F	F
A-1464	CH_3	Cl	$SCHF_2$	F	F
A-1465	CH_2CH_3	Cl	$SCHF_2$	F	F
A-1466	H	Cl	SCF_3	F	F
A-1467	F	Cl	SCF_3	F	F
A-1468	Cl	Cl	SCF_3	F	F
A-1469	CH_3	Cl	SCF_3	F	F
A-1470	CH_2CH_3	Cl	SCF_3	F	F
A-1471	H	Cl	$OCHF_2$	F	F
A-1472	F	Cl	$OCHF_2$	F	F
A-1473	Cl	Cl	$OCHF_2$	F	F
A-1474	CH_3	Cl	$OCHF_2$	F	F
A-1475	CH_2CH_3	Cl	$OCHF_2$	F	F
A-1476	H	Cl	OCF_3	F	F
A-1477	F	Cl	OCF_3	F	F
A-1478	Cl	Cl	OCF_3	F	F
A-1479	CH_3	Cl	OCF_3	F	F
A-1480	CH_2CH_3	Cl	OCF_3	F	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1481	H	Cl	F	Cl	F
A-1482	F	Cl	F	Cl	F
A-1483	Cl	Cl	F	Cl	F
A-1484	CH_3	Cl	F	Cl	F
A-1485	CH_2CH_3	Cl	F	Cl	F
A-1486	H	Cl	Cl	Cl	F
A-1487	F	Cl	Cl	Cl	F
A-1488	Cl	Cl	Cl	Cl	F
A-1489	CH_3	Cl	Cl	Cl	F
A-1490	CH_2CH_3	Cl	Cl	Cl	F
A-1491	H	Cl	CHF_2	Cl	F
A-1492	F	Cl	CHF_2	Cl	F
A-1493	Cl	Cl	CHF_2	Cl	F
A-1494	CH_3	Cl	CHF_2	Cl	F
A-1495	CH_2CH_3	Cl	CHF_2	Cl	F
A-1496	H	Cl	CF_3	Cl	F
A-1497	F	Cl	CF_3	Cl	F
A-1498	Cl	Cl	CF_3	Cl	F
A-1499	CH_3	Cl	CF_3	Cl	F
A-1500	CH_2CH_3	Cl	CF_3	Cl	F
A-1501	H	Cl	$SCHF_2$	Cl	F
A-1502	F	Cl	$SCHF_2$	Cl	F
A-1503	Cl	Cl	$SCHF_2$	Cl	F
A-1504	CH_3	Cl	$SCHF_2$	Cl	F
A-1505	CH_2CH_3	Cl	$SCHF_2$	Cl	F
A-1506	H	Cl	SCF_3	Cl	F
A-1507	F	Cl	SCF_3	Cl	F
A-1508	Cl	Cl	SCF_3	Cl	F
A-1509	CH_3	Cl	SCF_3	Cl	F
A-1510	CH_2CH_3	Cl	SCF_3	Cl	F
A-1511	H	Cl	$OCHF_2$	Cl	F
A-1512	F	Cl	$OCHF_2$	Cl	F
A-1513	Cl	Cl	$OCHF_2$	Cl	F
A-1514	CH_3	Cl	$OCHF_2$	Cl	F
A-1515	CH_2CH_3	Cl	$OCHF_2$	Cl	F
A-1516	H	Cl	OCF_3	Cl	F
A-1517	F	Cl	OCF_3	Cl	F
A-1518	Cl	Cl	OCF_3	Cl	F
A-1519	CH_3	Cl	OCF_3	Cl	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1520	CH_2CH_3	Cl	OCF_3	Cl	F
A-1521	H	Cl	F	CHF_2	F
A-1522	F	Cl	F	CHF_2	F
A-1523	Cl	Cl	F	CHF_2	F
A-1524	CH_3	Cl	F	CHF_2	F
A-1525	CH_2CH_3	Cl	F	CHF_2	F
A-1526	H	Cl	Cl	CHF_2	F
A-1527	F	Cl	Cl	CHF_2	F
A-1528	Cl	Cl	Cl	CHF_2	F
A-1529	CH_3	Cl	Cl	CHF_2	F
A-1530	CH_2CH_3	Cl	Cl	CHF_2	F
A-1531	H	Cl	CHF_2	CHF_2	F
A-1532	F	Cl	CHF_2	CHF_2	F
A-1533	Cl	Cl	CHF_2	CHF_2	F
A-1534	CH_3	Cl	CHF_2	CHF_2	F
A-1535	CH_2CH_3	Cl	CHF_2	CHF_2	F
A-1536	H	Cl	CF_3	CHF_2	F
A-1537	F	Cl	CF_3	CHF_2	F
A-1538	Cl	Cl	CF_3	CHF_2	F
A-1539	CH_3	Cl	CF_3	CHF_2	F
A-1540	CH_2CH_3	Cl	CF_3	CHF_2	F
A-1541	H	Cl	$SCHF_2$	CHF_2	F
A-1542	F	Cl	$SCHF_2$	CHF_2	F
A-1543	Cl	Cl	$SCHF_2$	CHF_2	F
A-1544	CH_3	Cl	$SCHF_2$	CHF_2	F
A-1545	CH_2CH_3	Cl	$SCHF_2$	CHF_2	F
A-1546	H	Cl	SCF_3	CHF_2	F
A-1547	F	Cl	SCF_3	CHF_2	F
A-1548	Cl	Cl	SCF_3	CHF_2	F
A-1549	CH_3	Cl	SCF_3	CHF_2	F
A-1550	CH_2CH_3	Cl	SCF_3	CHF_2	F
A-1551	H	Cl	$OCHF_2$	CHF_2	F
A-1552	F	Cl	$OCHF_2$	CHF_2	F
A-1553	Cl	Cl	$OCHF_2$	CHF_2	F
A-1554	CH_3	Cl	$OCHF_2$	CHF_2	F
A-1555	CH_2CH_3	Cl	$OCHF_2$	CHF_2	F
A-1556	H	Cl	OCF_3	CHF_2	F
A-1557	F	Cl	OCF_3	CHF_2	F
A-1558	Cl	Cl	OCF_3	CHF_2	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1559	CH_3	Cl	OCF_3	CHF_2	F
A-1560	CH_2CH_3	Cl	OCF_3	CHF_2	F
A-1561	H	Cl	F	CF_3	F
A-1562	F	Cl	F	CF_3	F
A-1563	Cl	Cl	F	CF_3	F
A-1564	CH_3	Cl	F	CF_3	F
A-1565	CH_2CH_3	Cl	F	CF_3	F
A-1566	H	Cl	Cl	CF_3	F
A-1567	F	Cl	Cl	CF_3	F
A-1568	Cl	Cl	Cl	CF_3	F
A-1569	CH_3	Cl	Cl	CF_3	F
A-1570	CH_2CH_3	Cl	Cl	CF_3	F
A-1571	H	Cl	CHF_2	CF_3	F
A-1572	F	Cl	CHF_2	CF_3	F
A-1573	Cl	Cl	CHF_2	CF_3	F
A-1574	CH_3	Cl	CHF_2	CF_3	F
A-1575	CH_2CH_3	Cl	CHF_2	CF_3	F
A-1576	H	Cl	CF_3	CF_3	F
A-1577	F	Cl	CF_3	CF_3	F
A-1578	Cl	Cl	CF_3	CF_3	F
A-1579	CH_3	Cl	CF_3	CF_3	F
A-1580	CH_2CH_3	Cl	CF_3	CF_3	F
A-1581	H	Cl	$SCHF_2$	CF_3	F
A-1582	F	Cl	$SCHF_2$	CF_3	F
A-1583	Cl	Cl	$SCHF_2$	CF_3	F
A-1584	CH_3	Cl	$SCHF_2$	CF_3	F
A-1585	CH_2CH_3	Cl	$SCHF_2$	CF_3	F
A-1586	H	Cl	SCF_3	CF_3	F
A-1587	F	Cl	SCF_3	CF_3	F
A-1588	Cl	Cl	SCF_3	CF_3	F
A-1589	CH_3	Cl	SCF_3	CF_3	F
A-1590	CH_2CH_3	Cl	SCF_3	CF_3	F
A-1591	H	Cl	$OCHF_2$	CF_3	F
A-1592	F	Cl	$OCHF_2$	CF_3	F
A-1593	Cl	Cl	$OCHF_2$	CF_3	F
A-1594	CH_3	Cl	$OCHF_2$	CF_3	F
A-1595	CH_2CH_3	Cl	$OCHF_2$	CF_3	F
A-1596	H	Cl	OCF_3	CF_3	F
A-1597	F	Cl	OCF_3	CF_3	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1598	Cl	Cl	OCF_3	CF_3	F
A-1599	CH_3	Cl	OCF_3	CF_3	F
A-1600	CH_2CH_3	Cl	OCF_3	CF_3	F
A-1601	H	Cl	F	H	Cl
A-1602	F	Cl	F	H	Cl
A-1603	Cl	Cl	F	H	Cl
A-1604	CH_3	Cl	F	H	Cl
A-1605	CH_2CH_3	Cl	F	H	Cl
A-1606	H	Cl	Cl	H	Cl
A-1607	F	Cl	Cl	H	Cl
A-1608	Cl	Cl	Cl	H	Cl
A-1609	CH_3	Cl	Cl	H	Cl
A-1610	CH_2CH_3	Cl	Cl	H	Cl
A-1611	H	Cl	CHF_2	H	Cl
A-1612	F	Cl	CHF_2	H	Cl
A-1613	Cl	Cl	CHF_2	H	Cl
A-1614	CH_3	Cl	CHF_2	H	Cl
A-1615	CH_2CH_3	Cl	CHF_2	H	Cl
A-1616	H	Cl	CF_3	H	Cl
A-1617	F	Cl	CF_3	H	Cl
A-1618	Cl	Cl	CF_3	H	Cl
A-1619	CH_3	Cl	CF_3	H	Cl
A-1620	CH_2CH_3	Cl	CF_3	H	Cl
A-1621	H	Cl	$SCHF_2$	H	Cl
A-1622	F	Cl	$SCHF_2$	H	Cl
A-1623	Cl	Cl	$SCHF_2$	H	Cl
A-1624	CH_3	Cl	$SCHF_2$	H	Cl
A-1625	CH_2CH_3	Cl	$SCHF_2$	H	Cl
A-1626	H	Cl	SCF_3	H	Cl
A-1627	F	Cl	SCF_3	H	Cl
A-1628	Cl	Cl	SCF_3	H	Cl
A-1629	CH_3	Cl	SCF_3	H	Cl
A-1630	CH_2CH_3	Cl	SCF_3	H	Cl
A-1631	H	Cl	$OCHF_2$	H	Cl
A-1632	F	Cl	$OCHF_2$	H	Cl
A-1633	Cl	Cl	$OCHF_2$	H	Cl
A-1634	CH_3	Cl	$OCHF_2$	H	Cl
A-1635	CH_2CH_3	Cl	$OCHF_2$	H	Cl
A-1636	H	Cl	OCF_3	H	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1637	F	Cl	OCF_3	H	Cl
A-1638	Cl	Cl	OCF_3	H	Cl
A-1639	CH_3	Cl	OCF_3	H	Cl
A-1640	CH_2CH_3	Cl	OCF_3	H	Cl
A-1641	H	Cl	F	F	Cl
A-1642	F	Cl	F	F	Cl
A-1643	Cl	Cl	F	F	Cl
A-1644	CH_3	Cl	F	F	Cl
A-1645	CH_2CH_3	Cl	F	F	Cl
A-1646	H	Cl	Cl	F	Cl
A-1647	F	Cl	Cl	F	Cl
A-1648	Cl	Cl	Cl	F	Cl
A-1649	CH_3	Cl	Cl	F	Cl
A-1650	CH_2CH_3	Cl	Cl	F	Cl
A-1651	H	Cl	CHF_2	F	Cl
A-1652	F	Cl	CHF_2	F	Cl
A-1653	Cl	Cl	CHF_2	F	Cl
A-1654	CH_3	Cl	CHF_2	F	Cl
A-1655	CH_2CH_3	Cl	CHF_2	F	Cl
A-1656	H	Cl	CF_3	F	Cl
A-1657	F	Cl	CF_3	F	Cl
A-1658	Cl	Cl	CF_3	F	Cl
A-1659	CH_3	Cl	CF_3	F	Cl
A-1660	CH_2CH_3	Cl	CF_3	F	Cl
A-1661	H	Cl	$SCHF_2$	F	Cl
A-1662	F	Cl	$SCHF_2$	F	Cl
A-1663	Cl	Cl	$SCHF_2$	F	Cl
A-1664	CH_3	Cl	$SCHF_2$	F	Cl
A-1665	CH_2CH_3	Cl	$SCHF_2$	F	Cl
A-1666	H	Cl	SCF_3	F	Cl
A-1667	F	Cl	SCF_3	F	Cl
A-1668	Cl	Cl	SCF_3	F	Cl
A-1669	CH_3	Cl	SCF_3	F	Cl
A-1670	CH_2CH_3	Cl	SCF_3	F	Cl
A-1671	H	Cl	$OCHF_2$	F	Cl
A-1672	F	Cl	$OCHF_2$	F	Cl
A-1673	Cl	Cl	$OCHF_2$	F	Cl
A-1674	CH_3	Cl	$OCHF_2$	F	Cl
A-1675	CH_2CH_3	Cl	$OCHF_2$	F	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1676	H	Cl	OCF_3	F	Cl
A-1677	F	Cl	OCF_3	F	Cl
A-1678	Cl	Cl	OCF_3	F	Cl
A-1679	CH_3	Cl	OCF_3	F	Cl
A-1680	CH_2CH_3	Cl	OCF_3	F	Cl
A-1681	H	Cl	F	Cl	Cl
A-1682	F	Cl	F	Cl	Cl
A-1683	Cl	Cl	F	Cl	Cl
A-1684	CH_3	Cl	F	Cl	Cl
A-1685	CH_2CH_3	Cl	F	Cl	Cl
A-1686	H	Cl	Cl	Cl	Cl
A-1687	F	Cl	Cl	Cl	Cl
A-1688	Cl	Cl	Cl	Cl	Cl
A-1689	CH_3	Cl	Cl	Cl	Cl
A-1690	CH_2CH_3	Cl	Cl	Cl	Cl
A-1691	H	Cl	CHF_2	Cl	Cl
A-1692	F	Cl	CHF_2	Cl	Cl
A-1693	Cl	Cl	CHF_2	Cl	Cl
A-1694	CH_3	Cl	CHF_2	Cl	Cl
A-1695	CH_2CH_3	Cl	CHF_2	Cl	Cl
A-1696	H	Cl	CF_3	Cl	Cl
A-1697	F	Cl	CF_3	Cl	Cl
A-1698	Cl	Cl	CF_3	Cl	Cl
A-1699	CH_3	Cl	CF_3	Cl	Cl
A-1700	CH_2CH_3	Cl	CF_3	Cl	Cl
A-1701	H	Cl	$SCHF_2$	Cl	Cl
A-1702	F	Cl	$SCHF_2$	Cl	Cl
A-1703	Cl	Cl	$SCHF_2$	Cl	Cl
A-1704	CH_3	Cl	$SCHF_2$	Cl	Cl
A-1705	CH_2CH_3	Cl	$SCHF_2$	Cl	Cl
A-1706	H	Cl	SCF_3	Cl	Cl
A-1707	F	Cl	SCF_3	Cl	Cl
A-1708	Cl	Cl	SCF_3	Cl	Cl
A-1709	CH_3	Cl	SCF_3	Cl	Cl
A-1710	CH_2CH_3	Cl	SCF_3	Cl	Cl
A-1711	H	Cl	$OCHF_2$	Cl	Cl
A-1712	F	Cl	$OCHF_2$	Cl	Cl
A-1713	Cl	Cl	$OCHF_2$	Cl	Cl
A-1714	CH_3	Cl	$OCHF_2$	Cl	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1715	CH_2CH_3	Cl	$OCHF_2$	Cl	Cl
A-1716	H	Cl	OCF_3	Cl	Cl
A-1717	F	Cl	OCF_3	Cl	Cl
A-1718	Cl	Cl	OCF_3	Cl	Cl
A-1719	CH_3	Cl	OCF_3	Cl	Cl
A-1720	CH_2CH_3	Cl	OCF_3	Cl	Cl
A-1721	H	Cl	F	CHF_2	Cl
A-1722	F	Cl	F	CHF_2	Cl
A-1723	Cl	Cl	F	CHF_2	Cl
A-1724	CH_3	Cl	F	CHF_2	Cl
A-1725	CH_2CH_3	Cl	F	CHF_2	Cl
A-1726	H	Cl	Cl	CHF_2	Cl
A-1727	F	Cl	Cl	CHF_2	Cl
A-1728	Cl	Cl	Cl	CHF_2	Cl
A-1729	CH_3	Cl	Cl	CHF_2	Cl
A-1730	CH_2CH_3	Cl	Cl	CHF_2	Cl
A-1731	H	Cl	CHF_2	CHF_2	Cl
A-1732	F	Cl	CHF_2	CHF_2	Cl
A-1733	Cl	Cl	CHF_2	CHF_2	Cl
A-1734	CH_3	Cl	CHF_2	CHF_2	Cl
A-1735	CH_2CH_3	Cl	CHF_2	CHF_2	Cl
A-1736	H	Cl	CF_3	CHF_2	Cl
A-1737	F	Cl	CF_3	CHF_2	Cl
A-1738	Cl	Cl	CF_3	CHF_2	Cl
A-1739	CH_3	Cl	CF_3	CHF_2	Cl
A-1740	CH_2CH_3	Cl	CF_3	CHF_2	Cl
A-1741	H	Cl	$SCHF_2$	CHF_2	Cl
A-1742	F	Cl	$SCHF_2$	CHF_2	Cl
A-1743	Cl	Cl	$SCHF_2$	CHF_2	Cl
A-1744	CH_3	Cl	$SCHF_2$	CHF_2	Cl
A-1745	CH_2CH_3	Cl	$SCHF_2$	CHF_2	Cl
A-1746	H	Cl	SCF_3	CHF_2	Cl
A-1747	F	Cl	SCF_3	CHF_2	Cl
A-1748	Cl	Cl	SCF_3	CHF_2	Cl
A-1749	CH_3	Cl	SCF_3	CHF_2	Cl
A-1750	CH_2CH_3	Cl	SCF_3	CHF_2	Cl
A-1751	H	Cl	$OCHF_2$	CHF_2	Cl
A-1752	F	Cl	$OCHF_2$	CHF_2	Cl
A-1753	Cl	Cl	$OCHF_2$	CHF_2	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1754	CH_3	Cl	$OCHF_2$	CHF_2	Cl
A-1755	CH_2CH_3	Cl	$OCHF_2$	CHF_2	Cl
A-1756	H	Cl	OCF_3	CHF_2	Cl
A-1757	F	Cl	OCF_3	CHF_2	Cl
A-1758	Cl	Cl	OCF_3	CHF_2	Cl
A-1759	CH_3	Cl	OCF_3	CHF_2	Cl
A-1760	CH_2CH_3	Cl	OCF_3	CHF_2	Cl
A-1761	H	Cl	F	CF_3	Cl
A-1762	F	Cl	F	CF_3	Cl
A-1763	Cl	Cl	F	CF_3	Cl
A-1764	CH_3	Cl	F	CF_3	Cl
A-1765	CH_2CH_3	Cl	F	CF_3	Cl
A-1766	H	Cl	Cl	CF_3	Cl
A-1767	F	Cl	Cl	CF_3	Cl
A-1768	Cl	Cl	Cl	CF_3	Cl
A-1769	CH_3	Cl	Cl	CF_3	Cl
A-1770	CH_2CH_3	Cl	Cl	CF_3	Cl
A-1771	H	Cl	CHF_2	CF_3	Cl
A-1772	F	Cl	CHF_2	CF_3	Cl
A-1773	Cl	Cl	CHF_2	CF_3	Cl
A-1774	CH_3	Cl	CHF_2	CF_3	Cl
A-1775	CH_2CH_3	Cl	CHF_2	CF_3	Cl
A-1776	H	Cl	CF_3	CF_3	Cl
A-1777	F	Cl	CF_3	CF_3	Cl
A-1778	Cl	Cl	CF_3	CF_3	Cl
A-1779	CH_3	Cl	CF_3	CF_3	Cl
A-1780	CH_2CH_3	Cl	CF_3	CF_3	Cl
A-1781	H	Cl	$SCHF_2$	CF_3	Cl
A-1782	F	Cl	$SCHF_2$	CF_3	Cl
A-1783	Cl	Cl	$SCHF_2$	CF_3	Cl
A-1784	CH_3	Cl	$SCHF_2$	CF_3	Cl
A-1785	CH_2CH_3	Cl	$SCHF_2$	CF_3	Cl
A-1786	H	Cl	SCF_3	CF_3	Cl
A-1787	F	Cl	SCF_3	CF_3	Cl
A-1788	Cl	Cl	SCF_3	CF_3	Cl
A-1789	CH_3	Cl	SCF_3	CF_3	Cl
A-1790	CH_2CH_3	Cl	SCF_3	CF_3	Cl
A-1791	H	Cl	$OCHF_2$	CF_3	Cl
A-1792	F	Cl	$OCHF_2$	CF_3	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1793	Cl	Cl	$OCHF_2$	CF_3	Cl
A-1794	CH_3	Cl	$OCHF_2$	CF_3	Cl
A-1795	CH_2CH_3	Cl	$OCHF_2$	CF_3	Cl
A-1796	H	Cl	OCF_3	CF_3	Cl
A-1797	F	Cl	OCF_3	CF_3	Cl
A-1798	Cl	Cl	OCF_3	CF_3	Cl
A-1799	CH_3	Cl	OCF_3	CF_3	Cl
A-1800	CH_2CH_3	Cl	OCF_3	CF_3	Cl
A-1801	H	CH_3	F	H	H
A-1802	F	CH_3	F	H	H
A-1803	Cl	CH_3	F	H	H
A-1804	CH_3	CH_3	F	H	H
A-1805	CH_2CH_3	CH_3	F	H	H
A-1806	H	CH_3	Cl	H	H
A-1807	F	CH_3	Cl	H	H
A-1808	Cl	CH_3	Cl	H	H
A-1809	CH_3	CH_3	Cl	H	H
A-1810	CH_2CH_3	CH_3	Cl	H	H
A-1811	H	CH_3	CHF_2	H	H
A-1812	F	CH_3	CHF_2	H	H
A-1813	Cl	CH_3	CHF_2	H	H
A-1814	CH_3	CH_3	CHF_2	H	H
A-1815	CH_2CH_3	CH_3	CHF_2	H	H
A-1816	H	CH_3	CF_3	H	H
A-1817	F	CH_3	CF_3	H	H
A-1818	Cl	CH_3	CF_3	H	H
A-1819	CH_3	CH_3	CF_3	H	H
A-1820	CH_2CH_3	CH_3	CF_3	H	H
A-1821	H	CH_3	$SCHF_2$	H	H
A-1822	F	CH_3	$SCHF_2$	H	H
A-1823	Cl	CH_3	$SCHF_2$	H	H
A-1824	CH_3	CH_3	$SCHF_2$	H	H
A-1825	CH_2CH_3	CH_3	$SCHF_2$	H	H
A-1826	H	CH_3	SCF_3	H	H
A-1827	F	CH_3	SCF_3	H	H
A-1828	Cl	CH_3	SCF_3	H	H
A-1829	CH_3	CH_3	SCF_3	H	H
A-1830	CH_2CH_3	CH_3	SCF_3	H	H
A-1831	H	CH_3	$OCHF_2$	H	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1832	F	CH_3	$OCHF_2$	H	H
A-1833	Cl	CH_3	$OCHF_2$	H	H
A-1834	CH_3	CH_3	$OCHF_2$	H	H
A-1835	CH_2CH_3	CH_3	$OCHF_2$	H	H
A-1836	H	CH_3	OCF_3	H	H
A-1837	F	CH_3	OCF_3	H	H
A-1838	Cl	CH_3	OCF_3	H	H
A-1839	CH_3	CH_3	OCF_3	H	H
A-1840	CH_2CH_3	CH_3	OCF_3	H	H
A-1841	H	CH_3	F	F	H
A-1842	F	CH_3	F	F	H
A-1843	Cl	CH_3	F	F	H
A-1844	CH_3	CH_3	F	F	H
A-1845	CH_2CH_3	CH_3	F	F	H
A-1846	H	CH_3	Cl	F	H
A-1847	F	CH_3	Cl	F	H
A-1848	Cl	CH_3	Cl	F	H
A-1849	CH_3	CH_3	Cl	F	H
A-1850	CH_2CH_3	CH_3	Cl	F	H
A-1851	H	CH_3	CHF_2	F	H
A-1852	F	CH_3	CHF_2	F	H
A-1853	Cl	CH_3	CHF_2	F	H
A-1854	CH_3	CH_3	CHF_2	F	H
A-1855	CH_2CH_3	CH_3	CHF_2	F	H
A-1856	H	CH_3	CF_3	F	H
A-1857	F	CH_3	CF_3	F	H
A-1858	Cl	CH_3	CF_3	F	H
A-1859	CH_3	CH_3	CF_3	F	H
A-1860	CH_2CH_3	CH_3	CF_3	F	H
A-1861	H	CH_3	$SCHF_2$	F	H
A-1862	F	CH_3	$SCHF_2$	F	H
A-1863	Cl	CH_3	$SCHF_2$	F	H
A-1864	CH_3	CH_3	$SCHF_2$	F	H
A-1865	CH_2CH_3	CH_3	$SCHF_2$	F	H
A-1866	H	CH_3	SCF_3	F	H
A-1867	F	CH_3	SCF_3	F	H
A-1868	Cl	CH_3	SCF_3	F	H
A-1869	CH_3	CH_3	SCF_3	F	H
A-1870	CH_2CH_3	CH_3	SCF_3	F	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1871	H	CH_3	$OCHF_2$	F	H
A-1872	F	CH_3	$OCHF_2$	F	H
A-1873	Cl	CH_3	$OCHF_2$	F	H
A-1874	CH_3	CH_3	$OCHF_2$	F	H
A-1875	CH_2CH_3	CH_3	$OCHF_2$	F	H
A-1876	H	CH_3	OCF_3	F	H
A-1877	F	CH_3	OCF_3	F	H
A-1878	Cl	CH_3	OCF_3	F	H
A-1879	CH_3	CH_3	OCF_3	F	H
A-1880	CH_2CH_3	CH_3	OCF_3	F	H
A-1881	H	CH_3	F	Cl	H
A-1882	F	CH_3	F	Cl	H
A-1883	Cl	CH_3	F	Cl	H
A-1884	CH_3	CH_3	F	Cl	H
A-1885	CH_2CH_3	CH_3	F	Cl	H
A-1886	H	CH_3	Cl	Cl	H
A-1887	F	CH_3	Cl	Cl	H
A-1888	Cl	CH_3	Cl	Cl	H
A-1889	CH_3	CH_3	Cl	Cl	H
A-1890	CH_2CH_3	CH_3	Cl	Cl	H
A-1891	H	CH_3	CHF_2	Cl	H
A-1892	F	CH_3	CHF_2	Cl	H
A-1893	Cl	CH_3	CHF_2	Cl	H
A-1894	CH_3	CH_3	CHF_2	Cl	H
A-1895	CH_2CH_3	CH_3	CHF_2	Cl	H
A-1896	H	CH_3	CF_3	Cl	H
A-1897	F	CH_3	CF_3	Cl	H
A-1898	Cl	CH_3	CF_3	Cl	H
A-1899	CH_3	CH_3	CF_3	Cl	H
A-1900	CH_2CH_3	CH_3	CF_3	Cl	H
A-1901	H	CH_3	$SCHF_2$	Cl	H
A-1902	F	CH_3	$SCHF_2$	Cl	H
A-1903	Cl	CH_3	$SCHF_2$	Cl	H
A-1904	CH_3	CH_3	$SCHF_2$	Cl	H
A-1905	CH_2CH_3	CH_3	$SCHF_2$	Cl	H
A-1906	H	CH_3	SCF_3	Cl	H
A-1907	F	CH_3	SCF_3	Cl	H
A-1908	Cl	CH_3	SCF_3	Cl	H
A-1909	CH_3	CH_3	SCF_3	Cl	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1910	CH_2CH_3	CH_3	SCF_3	Cl	H
A-1911	H	CH_3	$OCHF_2$	Cl	H
A-1912	F	CH_3	$OCHF_2$	Cl	H
A-1913	Cl	CH_3	$OCHF_2$	Cl	H
A-1914	CH_3	CH_3	$OCHF_2$	Cl	H
A-1915	CH_2CH_3	CH_3	$OCHF_2$	Cl	H
A-1916	H	CH_3	OCF_3	Cl	H
A-1917	F	CH_3	OCF_3	Cl	H
A-1918	Cl	CH_3	OCF_3	Cl	H
A-1919	CH_3	CH_3	OCF_3	Cl	H
A-1920	CH_2CH_3	CH_3	OCF_3	Cl	H
A-1921	H	CH_3	F	CHF_2	H
A-1922	F	CH_3	F	CHF_2	H
A-1923	Cl	CH_3	F	CHF_2	H
A-1924	CH_3	CH_3	F	CHF_2	H
A-1925	CH_2CH_3	CH_3	F	CHF_2	H
A-1926	H	CH_3	Cl	CHF_2	H
A-1927	F	CH_3	Cl	CHF_2	H
A-1928	Cl	CH_3	Cl	CHF_2	H
A-1929	CH_3	CH_3	Cl	CHF_2	H
A-1930	CH_2CH_3	CH_3	Cl	CHF_2	H
A-1931	H	CH_3	CHF_2	CHF_2	H
A-1932	F	CH_3	CHF_2	CHF_2	H
A-1933	Cl	CH_3	CHF_2	CHF_2	H
A-1934	CH_3	CH_3	CHF_2	CHF_2	H
A-1935	CH_2CH_3	CH_3	CHF_2	CHF_2	H
A-1936	H	CH_3	CF_3	CHF_2	H
A-1937	F	CH_3	CF_3	CHF_2	H
A-1938	Cl	CH_3	CF_3	CHF_2	H
A-1939	CH_3	CH_3	CF_3	CHF_2	H
A-1940	CH_2CH_3	CH_3	CF_3	CHF_2	H
A-1941	H	CH_3	$SCHF_2$	CHF_2	H
A-1942	F	CH_3	$SCHF_2$	CHF_2	H
A-1943	Cl	CH_3	$SCHF_2$	CHF_2	H
A-1944	CH_3	CH_3	$SCHF_2$	CHF_2	H
A-1945	CH_2CH_3	CH_3	$SCHF_2$	CHF_2	H
A-1946	H	CH_3	SCF_3	CHF_2	H
A-1947	F	CH_3	SCF_3	CHF_2	H
A-1948	Cl	CH_3	SCF_3	CHF_2	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1949	CH_3	CH_3	SCF_3	CHF_2	H
A-1950	CH_2CH_3	CH_3	SCF_3	CHF_2	H
A-1951	H	CH_3	$OCHF_2$	CHF_2	H
A-1952	F	CH_3	$OCHF_2$	CHF_2	H
A-1953	Cl	CH_3	$OCHF_2$	CHF_2	H
A-1954	CH_3	CH_3	$OCHF_2$	CHF_2	H
A-1955	CH_2CH_3	CH_3	$OCHF_2$	CHF_2	H
A-1956	H	CH_3	OCF_3	CHF_2	H
A-1957	F	CH_3	OCF_3	CHF_2	H
A-1958	Cl	CH_3	OCF_3	CHF_2	H
A-1959	CH_3	CH_3	OCF_3	CHF_2	H
A-1960	CH_2CH_3	CH_3	OCF_3	CHF_2	H
A-1961	H	CH_3	F	CF_3	H
A-1962	F	CH_3	F	CF_3	H
A-1963	Cl	CH_3	F	CF_3	H
A-1964	CH_3	CH_3	F	CF_3	H
A-1965	CH_2CH_3	CH_3	F	CF_3	H
A-1966	H	CH_3	Cl	CF_3	H
A-1967	F	CH_3	Cl	CF_3	H
A-1968	Cl	CH_3	Cl	CF_3	H
A-1969	CH_3	CH_3	Cl	CF_3	H
A-1970	CH_2CH_3	CH_3	Cl	CF_3	H
A-1971	H	CH_3	CHF_2	CF_3	H
A-1972	F	CH_3	CHF_2	CF_3	H
A-1973	Cl	CH_3	CHF_2	CF_3	H
A-1974	CH_3	CH_3	CHF_2	CF_3	H
A-1975	CH_2CH_3	CH_3	CHF_2	CF_3	H
A-1976	H	CH_3	CF_3	CF_3	H
A-1977	F	CH_3	CF_3	CF_3	H
A-1978	Cl	CH_3	CF_3	CF_3	H
A-1979	CH_3	CH_3	CF_3	CF_3	H
A-1980	CH_2CH_3	CH_3	CF_3	CF_3	H
A-1981	H	CH_3	$SCHF_2$	CF_3	H
A-1982	F	CH_3	$SCHF_2$	CF_3	H
A-1983	Cl	CH_3	$SCHF_2$	CF_3	H
A-1984	CH_3	CH_3	$SCHF_2$	CF_3	H
A-1985	CH_2CH_3	CH_3	$SCHF_2$	CF_3	H
A-1986	H	CH_3	SCF_3	CF_3	H
A-1987	F	CH_3	SCF_3	CF_3	H

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-1988	Cl	CH_3	SCF_3	CF_3	H
A-1989	CH_3	CH_3	SCF_3	CF_3	H
A-1990	CH_2CH_3	CH_3	SCF_3	CF_3	H
A-1991	H	CH_3	$OCHF_2$	CF_3	H
A-1992	F	CH_3	$OCHF_2$	CF_3	H
A-1993	Cl	CH_3	$OCHF_2$	CF_3	H
A-1994	CH_3	CH_3	$OCHF_2$	CF_3	H
A-1995	CH_2CH_3	CH_3	$OCHF_2$	CF_3	H
A-1996	H	CH_3	OCF_3	CF_3	H
A-1997	F	CH_3	OCF_3	CF_3	H
A-1998	Cl	CH_3	OCF_3	CF_3	H
A-1999	CH_3	CH_3	OCF_3	CF_3	H
A-2000	CH_2CH_3	CH_3	OCF_3	CF_3	H
A-2001	H	CH_3	F	H	F
A-2002	F	CH_3	F	H	F
A-2003	Cl	CH_3	F	H	F
A-2004	CH_3	CH_3	F	H	F
A-2005	CH_2CH_3	CH_3	F	H	F
A-2006	H	CH_3	Cl	H	F
A-2007	F	CH_3	Cl	H	F
A-2008	Cl	CH_3	Cl	H	F
A-2009	CH_3	CH_3	Cl	H	F
A-2010	CH_2CH_3	CH_3	Cl	H	F
A-2011	H	CH_3	CHF_2	H	F
A-2012	F	CH_3	CHF_2	H	F
A-2013	Cl	CH_3	CHF_2	H	F
A-2014	CH_3	CH_3	CHF_2	H	F
A-2015	CH_2CH_3	CH_3	CHF_2	H	F
A-2016	H	CH_3	CF_3	H	F
A-2017	F	CH_3	CF_3	H	F
A-2018	Cl	CH_3	CF_3	H	F
A-2019	CH_3	CH_3	CF_3	H	F
A-2020	CH_2CH_3	CH_3	CF_3	H	F
A-2021	H	CH_3	$SCHF_2$	H	F
A-2022	F	CH_3	$SCHF_2$	H	F
A-2023	Cl	CH_3	$SCHF_2$	H	F
A-2024	CH_3	CH_3	$SCHF_2$	H	F
A-2025	CH_2CH_3	CH_3	$SCHF_2$	H	F
A-2026	H	CH_3	SCF_3	H	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-2027	F	CH_3	SCF_3	H	F
A-2028	Cl	CH_3	SCF_3	H	F
A-2029	CH_3	CH_3	SCF_3	H	F
A-2030	CH_2CH_3	CH_3	SCF_3	H	F
A-2031	H	CH_3	$OCHF_2$	H	F
A-2032	F	CH_3	$OCHF_2$	H	F
A-2033	Cl	CH_3	$OCHF_2$	H	F
A-2034	CH_3	CH_3	$OCHF_2$	H	F
A-2035	CH_2CH_3	CH_3	$OCHF_2$	H	F
A-2036	H	CH_3	OCF_3	H	F
A-2037	F	CH_3	OCF_3	H	F
A-2038	Cl	CH_3	OCF_3	H	F
A-2039	CH_3	CH_3	OCF_3	H	F
A-2040	CH_2CH_3	CH_3	OCF_3	H	F
A-2041	H	CH_3	F	F	F
A-2042	F	CH_3	F	F	F
A-2043	Cl	CH_3	F	F	F
A-2044	CH_3	CH_3	F	F	F
A-2045	CH_2CH_3	CH_3	F	F	F
A-2046	H	CH_3	Cl	F	F
A-2047	F	CH_3	Cl	F	F
A-2048	Cl	CH_3	Cl	F	F
A-2049	CH_3	CH_3	Cl	F	F
A-2050	CH_2CH_3	CH_3	Cl	F	F
A-2051	H	CH_3	CHF_2	F	F
A-2052	F	CH_3	CHF_2	F	F
A-2053	Cl	CH_3	CHF_2	F	F
A-2054	CH_3	CH_3	CHF_2	F	F
A-2055	CH_2CH_3	CH_3	CHF_2	F	F
A-2056	H	CH_3	CF_3	F	F
A-2057	F	CH_3	CF_3	F	F
A-2058	Cl	CH_3	CF_3	F	F
A-2059	CH_3	CH_3	CF_3	F	F
A-2060	CH_2CH_3	CH_3	CF_3	F	F
A-2061	H	CH_3	$SCHF_2$	F	F
A-2062	F	CH_3	$SCHF_2$	F	F
A-2063	Cl	CH_3	$SCHF_2$	F	F
A-2064	CH_3	CH_3	$SCHF_2$	F	F
A-2065	CH_2CH_3	CH_3	$SCHF_2$	F	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-2066	H	CH_3	SCF_3	F	F
A-2067	F	CH_3	SCF_3	F	F
A-2068	Cl	CH_3	SCF_3	F	F
A-2069	CH_3	CH_3	SCF_3	F	F
A-2070	CH_2CH_3	CH_3	SCF_3	F	F
A-2071	H	CH_3	$OCHF_2$	F	F
A-2072	F	CH_3	$OCHF_2$	F	F
A-2073	Cl	CH_3	$OCHF_2$	F	F
A-2074	CH_3	CH_3	$OCHF_2$	F	F
A-2075	CH_2CH_3	CH_3	$OCHF_2$	F	F
A-2076	H	CH_3	OCF_3	F	F
A-2077	F	CH_3	OCF_3	F	F
A-2078	Cl	CH_3	OCF_3	F	F
A-2079	CH_3	CH_3	OCF_3	F	F
A-2080	CH_2CH_3	CH_3	OCF_3	F	F
A-2081	H	CH_3	F	Cl	F
A-2082	F	CH_3	F	Cl	F
A-2083	Cl	CH_3	F	Cl	F
A-2084	CH_3	CH_3	F	Cl	F
A-2085	CH_2CH_3	CH_3	F	Cl	F
A-2086	H	CH_3	Cl	Cl	F
A-2087	F	CH_3	Cl	Cl	F
A-2088	Cl	CH_3	Cl	Cl	F
A-2089	CH_3	CH_3	Cl	Cl	F
A-2090	CH_2CH_3	CH_3	Cl	Cl	F
A-2091	H	CH_3	CHF_2	Cl	F
A-2092	F	CH_3	CHF_2	Cl	F
A-2093	Cl	CH_3	CHF_2	Cl	F
A-2094	CH_3	CH_3	CHF_2	Cl	F
A-2095	CH_2CH_3	CH_3	CHF_2	Cl	F
A-2096	H	CH_3	CF_3	Cl	F
A-2097	F	CH_3	CF_3	Cl	F
A-2098	Cl	CH_3	CF_3	Cl	F
A-2099	CH_3	CH_3	CF_3	Cl	F
A-2100	CH_2CH_3	CH_3	CF_3	Cl	F
A-2101	H	CH_3	$SCHF_2$	Cl	F
A-2102	F	CH_3	$SCHF_2$	Cl	F
A-2103	Cl	CH_3	$SCHF_2$	Cl	F
A-2104	CH_3	CH_3	$SCHF_2$	Cl	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-2105	CH_2CH_3	CH_3	$SCHF_2$	Cl	F
A-2106	H	CH_3	SCF_3	Cl	F
A-2107	F	CH_3	SCF_3	Cl	F
A-2108	Cl	CH_3	SCF_3	Cl	F
A-2109	CH_3	CH_3	SCF_3	Cl	F
A-2110	CH_2CH_3	CH_3C	SCF_3	Cl	F
A-2111	H	CH_3C	$OCHF_2$	Cl	F
A-2112	F	CH_3	$OCHF_2$	Cl	F
A-2113	Cl	CH_3	$OCHF_2$	Cl	F
A-2114	CH_3	CH_3C	$OCHF_2$	Cl	F
A-2115	CH_2CH_3	CH_3C	$OCHF_2$	Cl	F
A-2116	H	CH_3	OCF_3	Cl	F
A-2117	F	CH_3	OCF_3	Cl	F
A-2118	Cl	CH_3	OCF_3	Cl	F
A-2119	CH_3	CH_3	OCF_3	Cl	F
A-2120	CH_2CH_3	CH_3	OCF_3	Cl	F
A-2121	H	CH_3	F	CHF_2	F
A-2122	F	CH_3	F	CHF_2	F
A-2123	Cl	CH_3	F	CHF_2	F
A-2124	CH_3	CH_3	F	CHF_2	F
A-2125	CH_2CH_3	CH_3	F	CHF_2	F
A-2126	H	CH_3	Cl	CHF_2	F
A-2127	F	CH_3	Cl	CHF_2	F
A-2128	Cl	CH_3	Cl	CHF_2	F
A-2129	CH_3	CH_3	Cl	CHF_2	F
A-2130	CH_2CH_3	CH_3	Cl	CHF_2	F
A-2131	H	CH_3	CHF_2	CHF_2	F
A-2132	F	CH_3	CHF_2	CHF_2	F
A-2133	Cl	CH_3	CHF_2	CHF_2	F
A-2134	CH_3	CH_3	CHF_2	CHF_2	F
A-2135	CH_2CH_3	CH_3	CHF_2	CHF_2	F
A-2136	H	CH_3	CF_3	CHF_2	F
A-2137	F	CH_3	CF_3	CHF_2	F
A-2138	Cl	CH_3	CF_3	CHF_2	F
A-2139	CH_3	CH_3	CF_3	CHF_2	F
A-2140	CH_2CH_3	CH_3	CF_3	CHF_2	F
A-2141	H	CH_3	$SCHF_2$	CHF_2	F
A-2142	F	CH_3	$SCHF_2$	CHF_2	F
A-2143	Cl	CH_3	$SCHF_2$	CHF_2	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-2144	CH_3	CH_3	$SCHF_2$	CHF_2	F
A-2145	CH_2CH_3	CH_3	$SCHF_2$	CHF_2	F
A-2146	H	CH_3	SCF_3	CHF_2	F
A-2147	F	CH_3	SCF_3	CHF_2	F
A-2148	Cl	CH_3	SCF_3	CHF_2	F
A-2149	CH_3	CH_3	SCF_3	CHF_2	F
A-2150	CH_2CH_3	CH_3	SCF_3	CHF_2	F
A-2151	H	CH_3	$OCHF_2$	CHF_2	F
A-2152	F	CH_3	$OCHF_2$	CHF_2	F
A-2153	Cl	CH_3	$OCHF_2$	CHF_2	F
A-2154	CH_3	CH_3	$OCHF_2$	CHF_2	F
A-2155	CH_2CH_3	CH_3	$OCHF_2$	CHF_2	F
A-2156	H	CH_3	OCF_3	CHF_2	F
A-2157	F	CH_3	OCF_3	CHF_2	F
A-2158	Cl	CH_3	OCF_3	CHF_2	F
A-2159	CH_3	CH_3	OCF_3	CHF_2	F
A-2160	CH_2CH_3	CH_3	OCF_3	CHF_2	F
A-2161	H	CH_3	F	CF_3	F
A-2162	F	CH_3	F	CF_3	F
A-2163	Cl	CH_3	F	CF_3	F
A-2164	CH_3	CH_3	F	CF_3	F
A-2165	CH_2CH_3	CH_3	F	CF_3	F
A-2166	H	CH_3	Cl	CF_3	F
A-2167	F	CH_3	Cl	CF_3	F
A-2168	Cl	CH_3	Cl	CF_3	F
A-2169	CH_3	CH_3	Cl	CF_3	F
A-2170	CH_2CH_3	CH_3	Cl	CF_3	F
A-2171	H	CH_3	CHF_2	CF_3	F
A-2172	F	CH_3	CHF_2	CF_3	F
A-2173	Cl	CH_3	CHF_2	CF_3	F
A-2174	CH_3	CH_3	CHF_2	CF_3	F
A-2175	CH_2CH_3	CH_3	CHF_2	CF_3	F
A-2176	H	CH_3	CF_3	CF_3	F
A-2177	F	CH_3	CF_3	CF_3	F
A-2178	Cl	CH_3	CF_3	CF_3	F
A-2179	CH_3	CH_3	CF_3	CF_3	F
A-2180	CH_2CH_3	CH_3	CF_3	CF_3	F
A-2181	H	CH_3	$SCHF_2$	CF_3	F
A-2182	F	CH_3	$SCHF_2$	CF_3	F

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-2183	Cl	CH_3	$SCHF_2$	CF_3	F
A-2184	CH_3	CH_3	$SCHF_2$	CF_3	F
A-2185	CH_2CH_3	CH_3	$SCHF_2$	CF_3	F
A-2186	H	CH_3	SCF_3	CF_3	F
A-2187	F	CH_3	SCF_3	CF_3	F
A-2188	Cl	CH_3	SCF_3	CF_3	F
A-2189	CH_3	CH_3	SCF_3	CF_3	F
A-2190	CH_2CH_3	CH_3	SCF_3	CF_3	F
A-2191	H	CH_3	$OCHF_2$	CF_3	F
A-2192	F	CH_3	$OCHF_2$	CF_3	F
A-2193	Cl	CH_3	$OCHF_2$	CF_3	F
A-2194	CH_3	CH_3	$OCHF_2$	CF_3	F
A-2195	CH_2CH_3	CH_3	$OCHF_2$	CF_3	F
A-2196	H	CH_3	OCF_3	CF_3	F
A-2197	F	CH_3	OCF_3	CF_3	F
A-2198	Cl	CH_3	OCF_3	CF_3	F
A-2199	CH_3	CH_3	OCF_3	CF_3	F
A-2200	CH_2CH_3	CH_3	OCF_3	CF_3	F
A-2201	H	CH_3	F	H	Cl
A-2202	F	CH_3	F	H	Cl
A-2203	Cl	CH_3	F	H	Cl
A-2204	CH_3	CH_3	F	H	Cl
A-2205	CH_2CH_3	CH_3	F	H	Cl
A-2206	H	CH_3	Cl	H	Cl
A-2207	F	CH_3	Cl	H	Cl
A-2208	Cl	CH_3	Cl	H	Cl
A-2209	CH_3	CH_3	Cl	H	Cl
A-2210	CH_2CH_3	CH_3	Cl	H	Cl
A-2211	H	CH_3	CHF_2	H	Cl
A-2212	F	CH_3	CHF_2	H	Cl
A-2213	Cl	CH_3	CHF_2	H	Cl
A-2214	CH_3	CH_3	CHF_2	H	Cl
A-2215	CH_2CH_3	CH_3	CHF_2	H	Cl
A-2216	H	CH_3	CF_3	H	Cl
A-2217	F	CH_3	CF_3	H	Cl
A-2218	Cl	CH_3	CF_3	H	Cl
A-2219	CH_3	CH_3	CF_3	H	Cl
A-2220	CH_2CH_3	CH_3	CF_3	H	Cl
A-2221	H	CH_3	$SCHF_2$	H	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-2222	F	CH_3	$SCHF_2$	H	Cl
A-2223	Cl	CH_3	$SCHF_2$	H	Cl
A-2224	CH_3	CH_3	$SCHF_2$	H	Cl
A-2225	CH_2CH_3	CH_3	$SCHF_2$	H	Cl
A-2226	H	CH_3	SCF_3	H	Cl
A-2227	F	CH_3	SCF_3	H	Cl
A-2228	Cl	CH_3	SCF_3	H	Cl
A-2229	CH_3	CH_3	SCF_3	H	Cl
A-2230	CH_2CH_3	CH_3	SCF_3	H	Cl
A-2231	H	CH_3	$OCHF_2$	H	Cl
A-2232	F	CH_3	$OCHF_2$	H	Cl
A-2233	Cl	CH_3	$OCHF_2$	H	Cl
A-2234	CH_3	CH_3	$OCHF_2$	H	Cl
A-2235	CH_2CH_3	CH_3	$OCHF_2$	H	Cl
A-2236	H	CH_3	OCF_3	H	Cl
A-2237	F	CH_3	OCF_3	H	Cl
A-2238	Cl	CH_3	OCF_3	H	Cl
A-2239	CH_3	CH_3	OCF_3	H	Cl
A-2240	CH_2CH_3	CH_3	OCF_3	H	Cl
A-2241	H	CH_3	F	F	Cl
A-2242	F	CH_3	F	F	Cl
A-2243	Cl	CH_3	F	F	Cl
A-2244	CH_3	CH_3	F	F	Cl
A-2245	CH_2CH_3	CH_3	F	F	Cl
A-2246	H	CH_3	Cl	F	Cl
A-2247	F	CH_3	Cl	F	Cl
A-2248	Cl	CH_3	Cl	F	Cl
A-2249	CH_3	CH_3	Cl	F	Cl
A-2250	CH_2CH_3	CH_3	Cl	F	Cl
A-2251	H	CH_3	CHF_2	F	Cl
A-2252	F	CH_3	CHF_2	F	Cl
A-2253	Cl	CH_3	CHF_2	F	Cl
A-2254	CH_3	CH_3	CHF_2	F	Cl
A-2255	CH_2CH_3	CH_3	CHF_2	F	Cl
A-2256	H	CH_3	CF_3	F	Cl
A-2257	F	CH_3	CF_3	F	Cl
A-2258	Cl	CH_3	CF_3	F	Cl
A-2259	CH_3	CH_3	CF_3	F	Cl
A-2260	CH_2CH_3	CH_3	CF_3	F	Cl

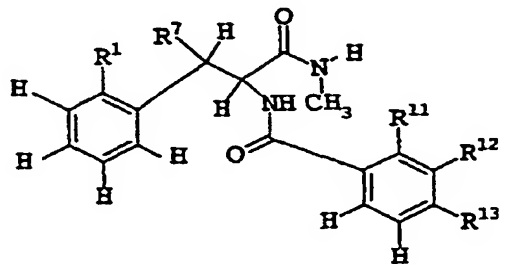
No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-2261	H	CH_3	$SCHF_2$	F	Cl
A-2262	F	CH_3	$SCHF_2$	F	Cl
A-2263	Cl	CH_3	$SCHF_2$	F	Cl
A-2264	CH_3	CH_3	$SCHF_2$	F	Cl
A-2265	CH_2CH_3	CH_3	$SCHF_2$	F	Cl
A-2266	H	CH_3	SCF_3	F	Cl
A-2267	F	CH_3	SCF_3	F	Cl
A-2268	Cl	CH_3	SCF_3	F	Cl
A-2269	CH_3	CH_3	SCF_3	F	Cl
A-2270	CH_2CH_3	CH_3	SCF_3	F	Cl
A-2271	H	CH_3	$OCHF_2$	F	Cl
A-2272	F	CH_3	$OCHF_2$	F	Cl
A-2273	Cl	CH_3	$OCHF_2$	F	Cl
A-2274	CH_3	CH_3	$OCHF_2$	F	Cl
A-2275	CH_2CH_3	CH_3	$OCHF_2$	F	Cl
A-2276	H	CH_3	OCF_3	F	Cl
A-2277	F	CH_3	OCF_3	F	Cl
A-2278	Cl	CH_3	OCF_3	F	Cl
A-2279	CH_3	CH_3	OCF_3	F	Cl
A-2280	CH_2CH_3	CH_3	OCF_3	F	Cl
A-2281	H	CH_3	F	Cl	Cl
A-2282	F	CH_3	F	Cl	Cl
A-2283	Cl	CH_3	F	Cl	Cl
A-2284	CH_3	CH_3	F	Cl	Cl
A-2285	CH_2CH_3	CH_3	F	Cl	Cl
A-2286	H	CH_3	Cl	Cl	Cl
A-2287	F	CH_3	Cl	Cl	Cl
A-2288	Cl	CH_3	Cl	Cl	Cl
A-2289	CH_3	CH_3	Cl	Cl	Cl
A-2290	CH_2CH_3	CH_3	Cl	Cl	Cl
A-2291	H	CH_3	CHF_2	Cl	Cl
A-2292	F	CH_3	CHF_2	Cl	Cl
A-2293	Cl	CH_3	CHF_2	Cl	Cl
A-2294	CH_3	CH_3	CHF_2	Cl	Cl
A-2295	CH_2CH_3	CH_3	CHF_2	Cl	Cl
A-2296	H	CH_3	CF_3	Cl	Cl
A-2297	F	CH_3	CF_3	Cl	Cl
A-2298	Cl	CH_3	CF_3	Cl	Cl
A-2299	CH_3	CH_3	CF_3	Cl	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-2300	CH_2CH_3	CH_3	CF_3	Cl	Cl
A-2301	H	CH_3	$SCHF_2$	Cl	Cl
A-2302	F	CH_3	$SCHF_2$	Cl	Cl
A-2303	Cl	CH_3	$SCHF_2$	Cl	Cl
A-2304	CH_3	CH_3	$SCHF_2$	Cl	Cl
A-2305	CH_2CH_3	CH_3	$SCHF_2$	Cl	Cl
A-2306	H	CH_3	SCF_3	Cl	Cl
A-2307	F	CH_3	SCF_3	Cl	Cl
A-2308	Cl	CH_3	SCF_3	Cl	Cl
A-2309	CH_3	CH_3	SCF_3	Cl	Cl
A-2310	CH_2CH_3	CH_3	SCF_3	Cl	Cl
A-2311	H	CH_3	$OCHF_2$	Cl	Cl
A-2312	F	CH_3	$OCHF_2$	Cl	Cl
A-2313	Cl	CH_3	$OCHF_2$	Cl	Cl
A-2314	CH_3	CH_3	$OCHF_2$	Cl	Cl
A-2315	CH_2CH_3	CH_3	$OCHF_2$	Cl	Cl
A-2316	H	CH_3	OCF_3	Cl	Cl
A-2317	F	CH_3	OCF_3	Cl	Cl
A-2318	Cl	CH_3	OCF_3	Cl	Cl
A-2319	CH_3	CH_3	OCF_3	Cl	Cl
A-2320	CH_2CH_3	CH_3	OCF_3	Cl	Cl
A-2321	H	CH_3	F	CHF_2	Cl
A-2322	F	CH_3	F	CHF_2	Cl
A-2323	Cl	CH_3	F	CHF_2	Cl
A-2324	CH_3	CH_3	F	CHF_2	Cl
A-2325	CH_2CH_3	CH_3	F	CHF_2	Cl
A-2326	H	CH_3	Cl	CHF_2	Cl
A-2327	F	CH_3	Cl	CHF_2	Cl
A-2328	Cl	CH_3	Cl	CHF_2	Cl
A-2329	CH_3	CH_3	Cl	CHF_2	Cl
A-2330	CH_2CH_3	CH_3	Cl	CHF_2	Cl
A-2331	H	CH_3	CHF_2	CHF_2	Cl
A-2332	F	CH_3	CHF_2	CHF_2	Cl
A-2333	Cl	CH_3	CHF_2	CHF_2	Cl
A-2334	CH_3	CH_3	CHF_2	CHF_2	Cl
A-2335	CH_2CH_3	CH_3	CHF_2	CHF_2	Cl
A-2336	H	CH_3	CF_3	CHF_2	Cl
A-2337	F	CH_3	CF_3	CHF_2	Cl
A-2338	Cl	CH_3	CF_3	CHF_2	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-2339	CH_3	CH_3	CF_3	CHF_2	Cl
A-2340	CH_2CH_3	CH_3	CF_3	CHF_2	Cl
A-2341	H	CH_3	$SCHF_2$	CHF_2	Cl
A-2342	F	CH_3	$SCHF_2$	CHF_2	Cl
A-2343	Cl	CH_3	$SCHF_2$	CHF_2	Cl
A-2344	CH_3	CH_3	$SCHF_2$	CHF_2	Cl
A-2345	CH_2CH_3	CH_3	$SCHF_2$	CHF_2	Cl
A-2346	H	CH_3	SCF_3	CHF_2	Cl
A-2347	F	CH_3	SCF_3	CHF_2	Cl
A-2348	Cl	CH_3	SCF_3	CHF_2	Cl
A-2349	CH_3	CH_3	SCF_3	CHF_2	Cl
A-2350	CH_2CH_3	CH_3	SCF_3	CHF_2	Cl
A-2351	H	CH_3	$OCHF_2$	CHF_2	Cl
A-2352	F	CH_3	$OCHF_2$	CHF_2	Cl
A-2353	Cl	CH_3	$OCHF_2$	CHF_2	Cl
A-2354	CH_3	CH_3	$OCHF_2$	CHF_2	Cl
A-2355	CH_2CH_3	CH_3	$OCHF_2$	CHF_2	Cl
A-2356	H	CH_3	OCF_3	CHF_2	Cl
A-2357	F	CH_3	OCF_3	CHF_2	Cl
A-2358	Cl	CH_3	OCF_3	CHF_2	Cl
A-2359	CH_3	CH_3	OCF_3	CHF_2	Cl
A-2360	CH_2CH_3	CH_3	OCF_3	CHF_2	Cl
A-2361	H	CH_3	F	CF_3	Cl
A-2362	F	CH_3	F	CF_3	Cl
A-2363	Cl	CH_3	F	CF_3	Cl
A-2364	CH_3	CH_3	F	CF_3	Cl
A-2365	CH_2CH_3	CH_3	F	CF_3	Cl
A-2366	H	CH_3	Cl	CF_3	Cl
A-2367	F	CH_3	Cl	CF_3	Cl
A-2368	Cl	CH_3	Cl	CF_3	Cl
A-2369	CH_3	CH_3	Cl	CF_3	Cl
A-2370	CH_2CH_3	CH_3	Cl	CF_3	Cl
A-2371	H	CH_3	CHF_2	CF_3	Cl
A-2372	F	CH_3	CHF_2	CF_3	Cl
A-2373	Cl	CH_3	CHF_2	CF_3	Cl
A-2374	CH_3	CH_3	CHF_2	CF_3	Cl
A-2375	CH_2CH_3	CH_3	CHF_2	CF_3	Cl
A-2376	H	CH_3	CF_3	CF_3	Cl
A-2377	F	CH_3	CF_3	CF_3	Cl

No.	R^1	R^2	R^{11}	R^{12}	R^{13}
A-2378	Cl	CH_3	CF_3	CF_3	Cl
A-2379	CH_3	CH_3	CF_3	CF_3	Cl
A-2380	CH_2CH_3	CH_3	CF_3	CF_3	Cl
A-2381	H	CH_3	$SCHF_2$	CF_3	Cl
A-2382	F	CH_3	$SCHF_2$	CF_3	Cl
A-2383	Cl	CH_3	$SCHF_2$	CF_3	Cl
A-2384	CH_3	CH_3	$SCHF_2$	CF_3	Cl
A-2385	CH_2CH_3	CH_3	$SCHF_2$	CF_3	Cl
A-2386	H	CH_3	SCF_3	CF_3	Cl
A-2387	F	CH_3	SCF_3	CF_3	Cl
A-2388	Cl	CH_3	SCF_3	CF_3	Cl
A-2389	CH_3	CH_3	SCF_3	CF_3	Cl
A-2390	CH_2CH_3	CH_3	SCF_3	CF_3	Cl
A-2391	H	CH_3	$OCHF_2$	CF_3	Cl
A-2392	F	CH_3	$OCHF_2$	CF_3	Cl
A-2393	Cl	CH_3	$OCHF_2$	CF_3	Cl
A-2394	CH_3	CH_3	$OCHF_2$	CF_3	Cl
A-2395	CH_2CH_3	CH_3	$OCHF_2$	CF_3	Cl
A-2396	H	CH_3	OCF_3	CF_3	Cl
A-2397	F	CH_3	OCF_3	CF_3	Cl
A-2398	Cl	CH_3	OCF_3	CF_3	Cl
A-2399	CH_3	CH_3	OCF_3	CF_3	Cl
A-2400	CH_2CH_3	CH_3	OCF_3	CF_3	Cl

With respect to their use, very particular preference is given to the compounds I'' (R^2, R^3, R^4, R^5, R^6, R^9, R^{10}, R^{14} and R^{15} are hydrogen and R^8 is methyl)



I''

and in which

R^1 is hydrogen, fluorine or methyl;

R^7 is hydrogen, methyl or ethyl;

R^{11} is chlorine;

R^{12} is trifluoromethyl;

R^{13} is hydrogen.

With respect to their use, very particular preference is also given to the compounds I'' in which

R^1 is hydrogen, fluorine or methyl;

R^7 is hydrogen, methyl or ethyl;

R^{11} is trifluoromethyl;

R^{12} is hydrogen;

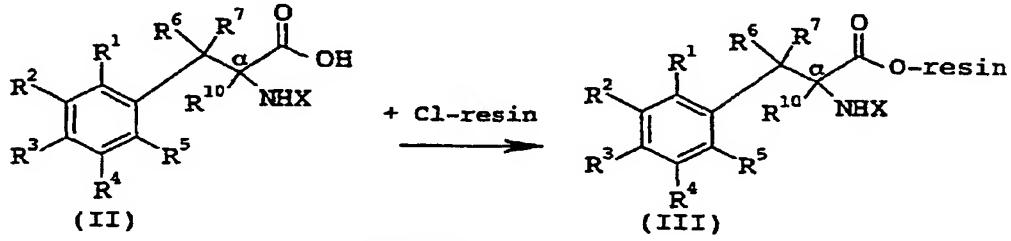
R^{13} is fluorine.

As mentioned at the outset, the S enantiomers or S diastereomers, with reference to the α carbon atom of the compounds listed in tables 1 to 96 are preferred.

The substituted phenylalanine derivatives of the formula I can be obtained by different routes, for example by solid-phase synthesis according to process 1 or 2:

Process 1:

A) Linking the phenylalanine derivative to a carrier resin

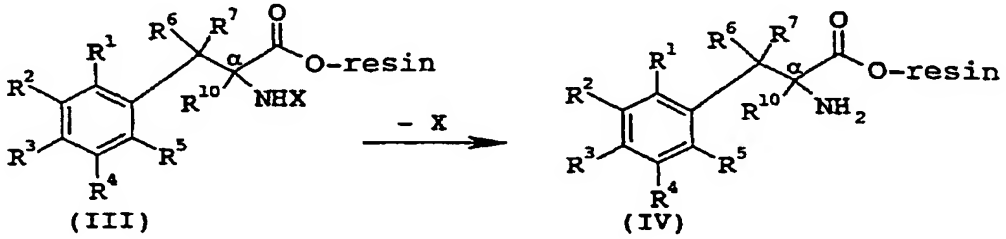


Scheme 1

How to attach amino acid derivatives to a carrier resin is known and described, for example, in Barlos K. et al., Int J Pept Protein Res 37 (1991), 513; Barlos K. et al., Int J Pept Protein Res 47 (1991), 148; Barlos K. et al., Tetrahedron Lett. 30 (1989), 3943; Barlos K. et al., Tetrahedron Lett. 32 (1991), 471; Chhabra S.R. et al., Tetrahedron Lett. 39 (1998), 1603. A phenylalanine derivative II protected at the nitrogen function by a protective group X, for example by a 9-fluorenylmethoxycarbonyl (FMOC) protective group, a phenylmethoxycarbonyl (Cbz) group, a nitrobenzenelsulfenyl (Nps) group or a 1,1-dimethylethoxycarbonyl (Boc) group, is, in an esterification, attached to a resin which carries hydroxyl groups (see Scheme 1). The preparation of compounds II is known and is carried out analogously to known methods as described, for example, in Barlos K. et al., Int J Pept Protein Res 37 (1991), 513; Barlos K. et al., Int J Pept Protein Res 47 (1991), 148; Barlos K. et al., Tetrahedron Lett. 30 (1989), 3943; Barlos K. et al., Tetrahedron Lett. 32 (1991), 471; Chhabra S.R. et al., Tetrahedron Lett. 39 (1998), 1603. Furthermore, a large number of compounds II is commercially available. Here, the esterification is preferably carried out in the presence of a base, the ratio of base to compound II being approximately 2:1. Examples of suitable bases are amines, such as ethyldiisopropylamine, triethylamine or N-methylmorpholine. Suitable resins are for example resins based on polystyrene and having Wang or trityl linkers. The reaction is generally carried out in an inert organic solvent, for example an aromatic hydrocarbon such as benzene or toluene, or in a chlorinated hydrocarbon such as dichloromethane, or in an aprotic dipolar organic solvent such as dimethylformamide (DMF),

dimethylacetamide (DMA) or N-methylpyrrolidone (NMP), or in an ether such as methyl t-butyl ether, diethyl ether or tetrahydrofuran (THF). The reaction can be carried out at temperatures of from 0°C to the boiling point of the reaction mixture, preferably at room temperature.

B) Removal of the protective group X



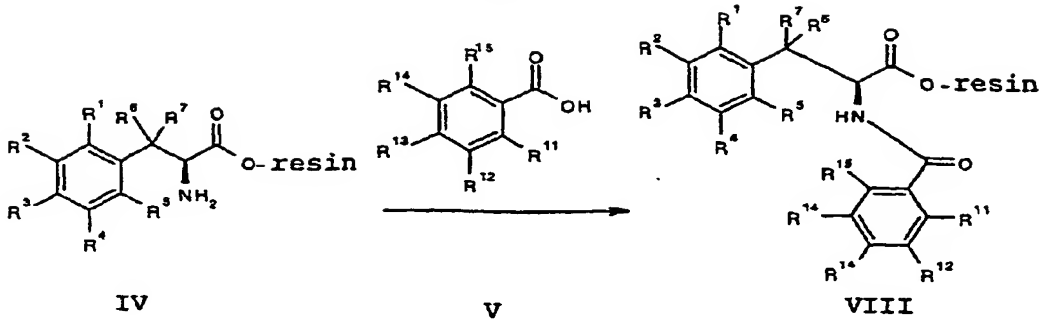
Scheme 2

In step B, the protective group X (see Scheme 2) is removed similarly to known methods, in the case of an FMOC protective group by adding a base such as, for example, piperidine or 1,5-diazabicyclo[4.3.0]non-5-ene in an aprotic dipolar organic solvent such as dimethylformamide (DMF), dimethylacetamide (DMA) or N-methylpyrrolidone (NMP) in a ratio of 1:1 to 1:5, giving compounds IV. The reaction can be carried out at temperatures of from 0°C to the boiling point of the reaction mixture, preferably at room temperature.

C) N-Acylation

The N-acylation of step C can be carried out a) using a substituted benzoic acid V (process variant C.1) or b) using a benzoic acid derivative, for example a substituted benzoyl halide VI (process variant C.2), similarly to known processses, as described, for example, in Neustadt B.R. et al., Tetrahedron Lett. 39 (1998), 5317.

C.1) N-Acylation using a substituted benzoic acid

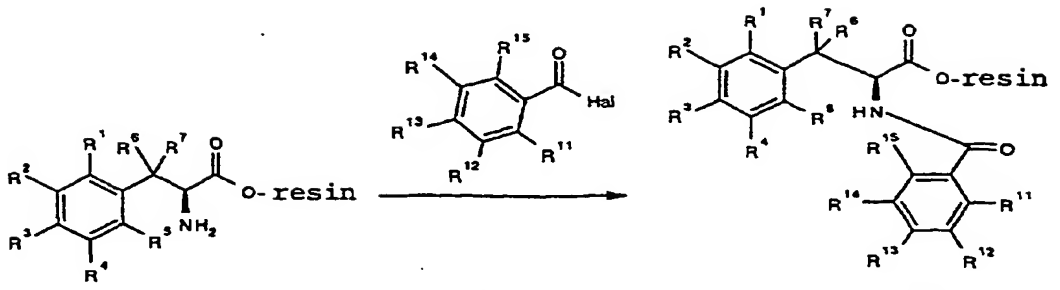


IV V VIII

Scheme 3

Using compounds VI, compounds V can be converted into compounds VIII (see Scheme 3), for example by activating the carboxyl group of V with electrophilic reagents such as, for example, dicyclohexylcarbodiimide (DCC) or diisopropylcarbodiimide (DIC) in the presence of a catalytic amount of an organic base such as, for example, 4-dimethylaminopyridine or pyridine. If appropriate, further activation of the reaction can be achieved by using 1-hydroxybenzotriazole. The reaction is carried out until complete conversion is achieved, over a period of 4-12h at temperatures of from 0°C to the boiling point of the reaction mixture, preferably at room temperature, in an inert organic solvent such as, for example, an aromatic hydrocarbon, such as benzene or toluene, or in a chlorinated hydrocarbon, such as dichloromethane, or in organic solvents, such as dimethylformamide (DMF), dimethylacetamide (DMA) or N-methylpyrrolidone (NMP), methyl t-butyl ether, diethyl ether or tetrahydrofuran (THF). The compounds V can be prepared similarly to known processes, as described, for example, in Houben-Weyl, "Methoden der organischen Chemie" [Methods of Organic Chemistry], 4th edition, Ed. J. Talbe, New York 1985, pp. 193-585. Furthermore, a large number of compounds V is also commercially available.

C.2) N-Acylation using a substituted benzoyl halide



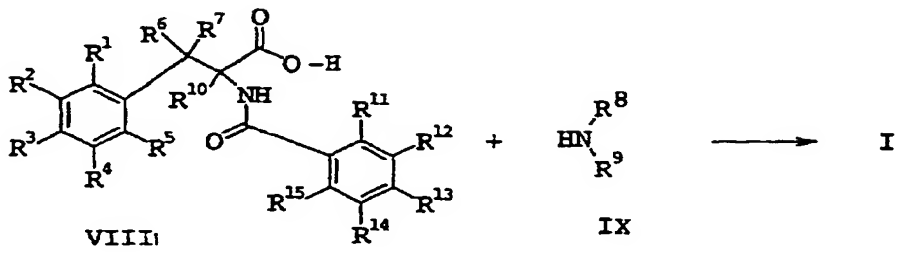
IV VI VIII

Scheme 4

To prepare compound VIII, compound IV can be reacted with a substituted benzoyl halide VI, by adding an organic base such as triethylamine, N-methylmorpholine or diisopropylethylamine (DIPEA) or else pyridine, if appropriate in the presence of a catalytic amount of 4-dimethylaminopyridine (see Scheme 4). The reaction takes place at temperatures of from 0°C to the boiling point of the reaction mixture, preferably at room temperature, in an inert organic solvent, such as, for example, an aromatic hydrocarbon, such as benzene or toluene, or in a chlorinated hydrocarbon, such as dichloromethane, or in organic solvents such as dimethylformamide (DMF), dimethylacetamide (DMA), N-methylpyrrolidone (NMP), methyl t-butyl ether, diethyl ether or tetrahydrofuran (THF). The compounds VI can be prepared similarly to known methods, as described, for example, in Houben-Weyl, "Methoden der organischen Chemie", 4th edition, Ed. J. Talbe, pp. 587-615. Furthermore, a large number of the compounds VI is also commercially available.

The derivatized amino acid attached to the resin is then cleaved from the resin using an acid, such as trifluoroacetic acid or acetic acid, in a polar solvent, such as 2,2,2-trifluoroethanol, dichloromethane or mixtures of the solvents mentioned above, if appropriate in the presence of water. It is possible to use, for example, mixtures of 2,2,2-trifluoroethanol / acetic acid / dichloromethane.

D) Conversion of the N-substituted phenylalanine derivative into compound I



VIII IX I

Scheme 5

The conversion of the compound VIII into the phenylalanine derivatives of the formula I is carried out similarly to processes known from the literature, as described, for example, in Guan et al., J. Comb. Chem. 2 (2000), 297. Thus, the conversion of the derivatized amino acid into the amide I according to the invention can be carried out by adding an amine of the formula IX (see Scheme 5) in the presence of a resin-bound condensing agent, such as, for example, polystyrene-bound dicyclohexylcarbodiimide, at temperatures of from 0°C to the boiling point of the reaction mixture, preferably at room temperature, in an inert aprotic dipolar organic solvent, such as dimethylformamide (DMF), dimethylacetamide (DMA) or N-methylpyrrolidone (NMP). Amines of the formula IX can be synthesized similarly to methods known to the person skilled in the art. Moreover, a large number of the amines IX is commercially available.

Process 2

Process 2 describes the preparation of compounds I in which R^9 = hydrogen.

A Reductive amination of a polymer resin X

X XI

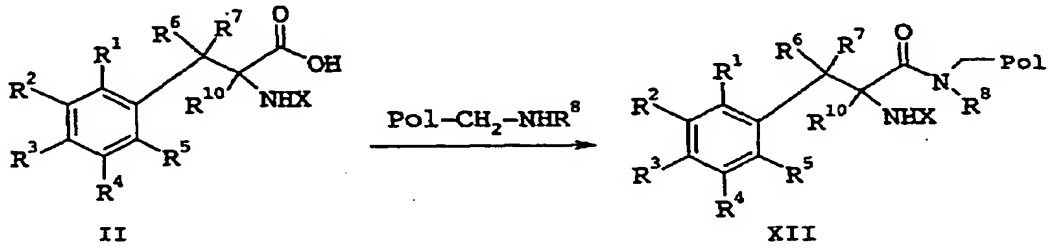
Scheme 6

The reductive amination of a polymer-bound aldehyde is carried out similarly to known methods as described, for example, in Fivush et al., Tetrahedron Lett. 38 (1997), 7151; del Fresno et

al., Tetrahedron Lett. 39 (1998), 2639 and Bilodeau et al., J Org Chem. 63 (1998), 2800.

A suitable polymer resin, for example a 4-(4-formyl-3-methoxyphenoxy)butyrylaminomethylpolystyrene resin (Pol-CHO) X is, in the presence of a reducing agent, such as sodium cyanoborohydride or else sodium trisacetoxyborohydrid, if appropriate with addition of acetic acid, methanol or ethanol, reacted in an organic solvent, such as dimethylformamide (DMF), dimethylacetamide (DMA) or N-methylpyrrolidone (NMP), with an amine IX, giving an aminated resin XI (see Scheme 6). The reaction is carried out until complete conversion is achieved, for a period of 12-24h, at temperatures of from 0°C to the boiling point of the reaction mixture, preferably at 40-60°C.

B N-Acylation using a substituted phenylalanine derivative



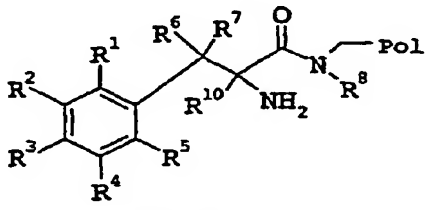
Scheme 7

The compounds XI can be reacted with a phenylalanine derivative II which is protected at the nitrogen function by a protective group X, for example by a 9-fluorenylmethoxycarbonyl (FMOC) protective group, a phenylmethoxycarbonyl (Cbz) group, a nitrobenzenesulfenyl (Nps) group or a 1,1-dimethylethoxycarbonyl (Boc) group, to give the compounds XII. This can be achieved, for example, by activating the carboxyl group of II with electrophilic reagents, such as, for example, benzotriazol-1-yloxytrispyrrolidinophosphonium hexafluorophosphate (PyBOP) or else with the aid of condensing agents, such as dicyclohexylcarbodiimide (DCC) or diisopropylcarbodiimide and addition of a catalytic amount of an organic base, such as, for example, N-methylmorpholine or 4-dimethylaminopyridine. The reaction is carried out until complete conversion is achieved, for a period of 12-24h, at temperatures of from 0°C to the boiling point of the reaction mixture, preferably at room temperature, in an inert organic solvent, such as, for example, an aromatic hydrocarbon, such as benzene or toluene, or in a chlorinated hydrocarbon, such as dichloromethane, or in organic solvents, such as

dimethylformamide (DMF), dimethylacetamide (DMA), N-methylpyrrolidone (NMP), methyl t-butyl ether, diethyl ether or tetrahydrofuran (THF).

C) Removal of the protective group X

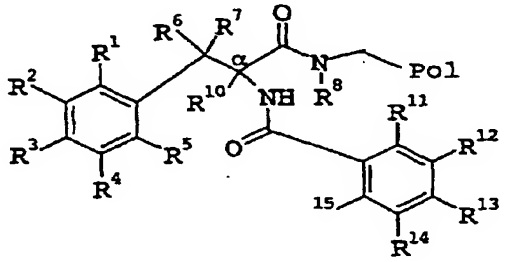
The protective group X is removed analogously to step B of process 1, giving compounds XIII



XIII

D) N-Acylation

The subsequent N-acylation to give the compounds I can be carried out similarly to the procedure described in step C.1 or C.2 of process 1, using a) a substituted benzoic acid V or [lacuna] a benzoic acid derivative, for example a substituted benzoyl halide VI, giving the compounds XIV



XIV

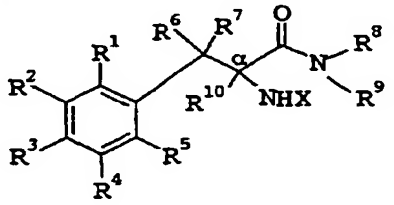
The derivatized amino acid which is attached to the resin is then cleaved from the resin using an acid, such as trifluoroacetic acid or acetic acid, in a polar solvent, such as 2,2,2-trifluoroethanol, dichloromethane or mixtures of the solvents mentioned above, if appropriate in the presence of water. It is possible, for example, to use mixtures of 2,2,2-trifluoroethanol / acetic acid / dichloromethane, giving the compounds I in which R^9 = hydrogen.

It is furthermore possible to prepare compounds I in liquid phase.

Process 3

A) Amination

Here, a phenylalanine derivative II protected at the nitrogen function by a protective group X, for example by a 9-fluorenylmethoxycarbonyl (FMOC) protective group, a phenylmethoxycarbonyl (Cbz) group, a nitrobenzenesulfenyl (Nps) group or a 1,1-dimethylethoxycarbonyl (Boc) group, is initially reacted with an amine IX in the presence of a suitable condensing agent, such as, for example, dicyclohexylcarbodiimide or diisopropylcarbodiimide, to give the compounds XV

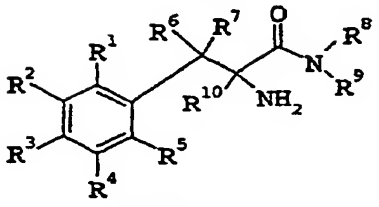


XV

If appropriate, further activation of the reaction can be achieved by using 1-hydroxybenzotriazole. The reaction is carried out until complete conversion has been achieved, over a period of 4-12h, at temperatures of from 0°C to the boiling point of the reaction mixture, preferably at room temperature, in an inert organic solvent, such as, for example, an aromatic hydrocarbon, such as benzene or toluene, or in a chlorinated hydrocarbon, such as dichloromethane, or in organic solvents, such as dimethylformamide (DMF), methyl t-butyl ether, diethyl ether or tetrahydrofuran (THF). The reaction is carried out similarly to known methods as described, for example, in Bouygues et al., Med. Chem. 33 (1998) 445-450.

B) Removal of the protective group X

Depending on the protective group used, the protective group X is removed under basic, acidic or reductive conditions, for the Fmoc protective group, for example, analogously to step B of process 1, giving compounds XVI



XVI

C) N-Acylation

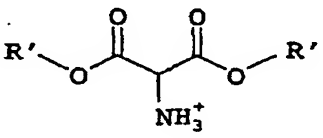
The subsequent N-acylation to give the compounds I can be carried out similarly to the procedure described in step C.1 or C.2 of process 1, using a) a substituted benzoic acid V or [lacuna] a benzoic acid derivative, for example a substituted benzoyl halide VI.

Process 4

Substituted phenylalanine derivatives I in which R^{10} = hydrogen can also be prepared analogously to the "malonic ester synthesis" using an aminomalonic acid ester such as diethyl aminomalonate.

Step A)

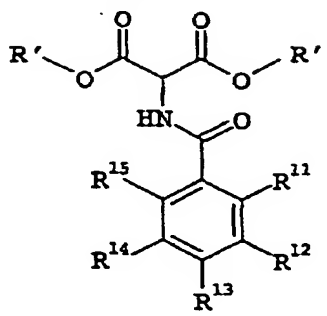
Here, the salt (for example the chloride) of an ammoniummalonic acid ester



in which R' is a low-molecular-weight organic radical, for example a C_1-C_4-alkyl radical, preferably an easily obtainable, cheap compound, such as, for example, diethyl aminomalonate or dimethyl aminomalonate is initially reacted

with a substituted benzoic acid, for example a substituted benzoyl halide VI, in the presence of a base, such as ethyldiisopropylamine, triethylamine or N-methylmorpholine, giving compounds XVII

111

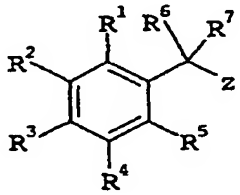


XVII

The reaction is carried out until complete conversion has been achieved, for a period of 4-12h, at temperatures of from -15°C to the boiling point of the reaction mixture, preferably at 0°C, in an inert organic solvent, such as, for example, an aromatic hydrocarbon, such as benzene or toluene, or in a chlorinated hydrocarbon, such as dichloromethane, or in organic solvents, such as dimethylformamide (DMF), methyl t-butyl ether, diethyl ether or tetrahydrofuran (THF).

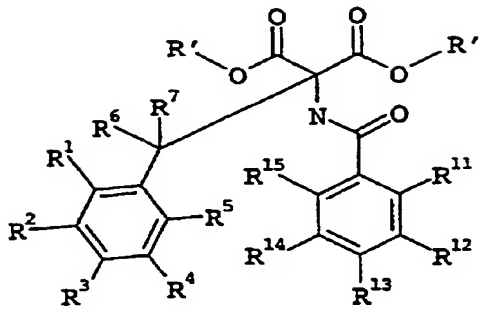
Step B)

The product obtained in step A) is reacted with a benzyl derivative XVIII



XVIII

carrying a leaving group z, in an organic solvent, such as, for example, a cyclic ether, such as tetrahydrofuran (THF) or dioxane, in the presence of a base such as potassium tert-butoxide, sodium ethoxide, potassium carbonate or sodium carbonate, to give the diesters XIX

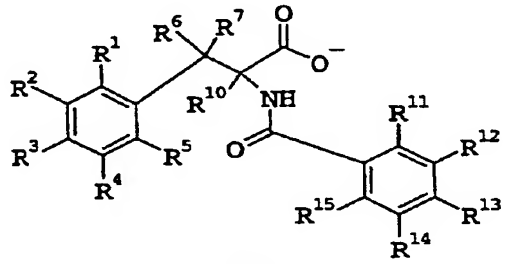


XIX

Suitable leaving groups z are, for example, halide or organosulfonyl groups. The reaction is carried out until complete conversion has been achieved, for a period of 4-12h, at temperatures of from 0°C to the boiling point of the reaction mixture, preferably at 80°C.

Step C)

Decarboxylation and hydrolysis of the diester XIX to give the compounds XX



XX

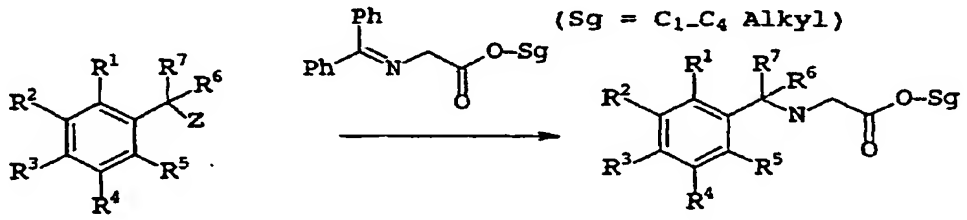
are carried out in the presence of a base and water, for example aqueous sodium hydroxide solution or aqueous potassium hydroxide solution, in one of the organic solvents mentioned in step B. The mixture is subsequently neutralized to a pH below 7, preferably a pH of 1-2, using a strong mineral acid, such as, for example, hydrochloric acid.

Step D)

The reaction of the acid of XX with an amine IX in the presence of resin-bound dicyclohexylcarbodiimide (DCC) is carried out analogously to the reaction conditions described in process 1, step D.

Process 5

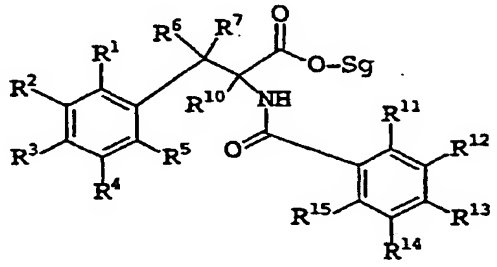
Alternatively, the compounds of the formula I according to the invention can also be obtained by reacting the benzyl derivative XVIII with an alkylating agent XXI to give the compounds XXII. The methods for this purpose are known to the person skilled in the art (see, for example, O Donnell et al., Aldrichimica Acta Vol. 34 No. 1, 2001, pages 3 to 15) known.



XXIII XXI XXII

Scheme 8

The further conversion into XXIII can be carried out analogously to the methods described in process 1, step C.1 or step C.2 by reacting the compound XXII with the benzyl derivative V or VI to give compound XXIII.



XXIII

Subsequent conversion of XXIII into the compounds I can be effected using amine IX. Methods for this purpose can be found, for example, in DE 3917880 or J. het. Chem. 1991, 28, 33 ff.

The compounds I and their agriculturally useful salts are suitable, both in the form of isomer mixtures and in the form of the pure isomers, as herbicides. The herbicidal compositions comprising compounds of the formula I control vegetation on non-crop areas very efficiently, especially at high rates of application. They act against broad-leaved weeds and harmful grasses in crops such as wheat, rice, maize, soya and cotton without causing any significant damage to the crop plants. This effect is mainly observed at low rates of application.

Depending on the application method used, the compounds I or the herbicidal compositions comprising them, can additionally be employed in a further number of crop plants for eliminating undesirable plants. Examples of suitable crops are the following:

Allium cepa, Ananas comosus, Arachis hypogaea, Asparagus officinalis, Beta vulgaris spec. altissima, Beta vulgaris spec. rapa, Brassica napus var. napus, Brassica napus var. napobrassica, Brassica rapa var. silvestris, Camellia sinensis, Carthamus tinctorius, Carya illinoinensis, Citrus limon, Citrus sinensis, Coffea arabica (Coffea canephora, Coffea liberica), Cucumis sativus, Cynodon dactylon, Daucus carota, Elaeis guineensis, Fragaria vesca, Glycine max, Gossypium hirsutum, (Gossypium arboreum, Gossypium herbaceum, Gossypium vitifolium), Helianthus annuus, Hevea brasiliensis, Hordeum vulgare, Humulus lupulus, Ipomoea batatas, Juglans regia, Lens culinaris, Linum usitatissimum, Lycopersicon lycopersicum, Malus spec., Manihot esculenta, Medicago sativa, Musa spec., Nicotiana tabacum (N.rustica), Olea europaea, Oryza sativa, Phaseolus lunatus, Phaseolus vulgaris, Picea abies, Pinus spec., Pisum sativum, Prunus avium, Prunus persica, Pyrus communis, Ribes sylvestre, Ricinus communis, Saccharum officinarum, Secale cereale, Solanum tuberosum, Sorghum bicolor (s. vulgare), Theobroma cacao, Trifolium pratense, Triticum aestivum, Triticum durum, Vicia faba, Vitis vinifera and Zea mays.

In addition, the compounds I may also be used in crops which tolerate the action of herbicides owing to breeding, including genetic engineering methods.

Furthermore, the compounds of the formula I are also suitable for regulating the growth of plants of plants.

The compounds I, or the herbicidal compositions comprising them, can be used for example in the form of ready-to-spray aqueous solutions, powders, suspensions, also highly-concentrated aqueous, oily or other suspensions or dispersions, emulsions, oil dispersions, pastes, dusts, materials for broadcasting or granules, by means of spraying, atomizing, dusting, broadcasting or watering. The use forms depend on the intended aims; in any case, they should ensure a very fine distribution of the active compounds according to the invention.

Essentially, suitable inert auxiliaries include:
mineral oil fractions of medium to high boiling point, such as kerosene and diesel oil, furthermore coal tar oils and oils of vegetable or animal origin, aliphatic, cyclic and aromatic hydrocarbons, e.g. paraffins, tetrahydronaphthalene, alkylated naphthalenes and their derivatives, alkylated benzenes and their derivatives, alcohols such as methanol, ethanol, propanol, butanol and cyclohexanol, ketones such as cyclohexanone, or strongly polar solvents, e.g. amines such as N-methylpyrrolidone, and water.

Aqueous use forms can be prepared from emulsion concentrates, suspensions, pastes, wettable powders or water-dispersible granules by adding water. To prepare emulsions, pastes or oil dispersions, the phenylalanine derivatives, either as such or dissolved in an oil or solvent, can be homogenized in water by means of a wetting agent, tackifier, dispersant or emulsifier. Alternatively, it is possible to prepare concentrates consisting of active substance, wetting agent, tackifier, dispersant or emulsifier and, if desired, solvent or oil, which are suitable for dilution with water.

Suitable surfactants (adjuvants) are the alkali metal salts, alkaline earth metal salts and ammonium salts of aromatic sulfonic acids, e.g. ligno-, phenol-, naphthalene- and dibutylnaphthalenesulfonic acid, and of fatty acids, alkyl- and alkylarylsulfonates, alkyl sulfates, lauryl ether sulfates and fatty alcohol sulfates, and salts of sulfated hexa-, hepta- and octadecanols, and also of fatty alcohol glycol ethers, condensates of sulfonated naphthalene and its derivatives with formaldehyde, condensates of naphthalene, or of the naphthalenesulfonic acids with phenol and formaldehyde, polyoxyethylene octylphenol ether, ethoxylated isooctyl-, octyl- or nonylphenol, alkylphenyl or tributylphenyl polyglycol ether, alkylaryl polyether alcohols, isotridecyl alcohol, fatty alcohol/ethylene oxide condensates, ethoxylated castor oil,

polyoxyethylene alkyl ethers or polyoxypropylene alkyl ethers, lauryl alcohol polyglycol ether acetate, sorbitol esters, lignosulfite waste liquors or methylcellulose.

Powders, materials for broadcasting and dusts can be prepared by mixing or grinding the active substances together with a solid carrier.

Granules, e.g. coated granules, impregnated granules and homogeneous granules, can be prepared by binding the active compounds to solid carriers. Solid carriers are mineral earths, such as silicas, silica gels, silicates, talc, kaolin, limestone, lime, chalk, bole, loess, clay, dolomite, diatomaceous earth, calcium sulfate, magnesium sulfate, magnesium oxide, ground synthetic materials, fertilizers such as ammonium sulfate, ammonium phosphate, ammonium nitrate and ureas, and products of vegetable origin, such as cereal meal, tree bark meal, wood meal and nutshell meal, cellulose powders, or other solid carriers.

The concentrations of the active compounds of the formula I in the ready-to-use preparations can be varied within wide ranges. In general, the formulations comprise from about 0.001 to 98% by weight, preferably from 0.01 to 95% by weight of at least one active compound. The active compounds are employed in a purity of from 90% to 100%, preferably from 95% to 100% (according to the NMR spectrum).

The compounds I according to the invention can be formulated, for example, as follows:

I. 20 parts by weight of the compound No. I-19 are dissolved in a mixture consisting of 80 parts by weight of alkylated benzene, 10 parts by weight of the adduct of 8 to 10 mol of ethylene oxide to 1 mol of oleic acid N-monoethanolamide, 5 parts by weight of calcium dodecylbenzenesulfonate and 5 parts by weight of the adduct of 40 mol of ethylene oxide to 1 mol of castor oil. Pouring the solution into 100,000 parts by weight of water and finely distributing it therein gives an aqueous dispersion which comprises 0.02% by weight of the active compound.

II. 20 parts by weight of the compound No. I-24 are dissolved in a mixture consisting of 40 parts by weight of cyclohexanone, 30 parts by weight of isobutanol, 20 parts by weight of the adduct of 7 mol of ethylene oxide to 1 mol of isooctylphenol and 10 parts by weight of the adduct of 40 mol of ethylene oxide to 1 mol of castor oil. Pouring

the solution into 100,000 parts by weight of water and finely distributing it therein gives an aqueous dispersion which comprises 0.02% by weight of the active compound.

III. 20 parts by weight of the active compound No. I-25 are dissolved in a mixture consisting of 25 parts by weight of cyclohexanone, 65 parts by weight of a mineral oil fraction of boiling point 210 to 280°C and 10 parts by weight of the adduct of 40 mol of ethylene oxide to 1 mol of castor oil. Pouring the solution into 100,000 parts by weight of water and finely distributing it therein gives an aqueous dispersion which comprises 0.02% by weight of the active compound.

IV. 20 parts by weight of the active compound No. I-32 are mixed thoroughly with 3 parts by weight of sodium diisobutylnaphthalenesulfonate, 17 parts by weight of the sodium salt of a lignosulfonic acid from a sulfite waste liquor and 60 parts by weight of pulverulent silica gel, and the mixture is ground in a hammer mill. Finely distributing the mixture in 20,000 parts by weight of water gives a spray mixture which comprises 0.1% by weight of the active compound.

V. 3 parts by weight of the active compound No. I-49 are mixed with 97 parts by weight of finely divided kaolin. This gives a dust which comprises 3% by weight of the active compound.

VI. 20 parts by weight of the active compound No. I-44 are mixed intimately with 2 parts by weight of the calcium salt of dodecylbenzenesulfonate, 8 parts by weight of fatty alcohol polyglycol ether, 2 parts by weight of the sodium salt of a phenol/urea/formaldehyde condensate and 68 parts by weight of a paraffinic mineral oil. This gives a stable oily dispersion.

VII. 1 part by weight of the compound No. I-26 is dissolved in a mixture consisting of 70 parts by weight of cyclohexanone, 20 parts by weight of ethoxylated isooctylphenol and 10 parts by weight of ethoxylated castor oil. This gives a stable emulsion concentrate.

VIII. 1 part by weight of the compound No. I-3 is dissolved in a mixture consisting of 80 parts by weight of cyclohexanone and 20 parts by weight of Wettol® EM 31 (nonionic

emulsifier based on ethoxylated castor oil). This gives a stable emulsion concentrate.

The active compounds I or the herbicidal compositions can be applied pre- or post-emergence. If the active compounds are less well tolerated by certain crop plants, application techniques may be used in which the herbicidal compositions are sprayed, with the aid of the spraying equipment, in such a way that they come into contact as little as possible, if at all, with the leaves of the sensitive crop plants, while the active compounds reach the leaves of undesirable plants growing underneath, or the bare soil surface (post-directed, lay-by).

The growth-regulating compositions can be applied by the pre-emergence method or by the post-emergence method.

Depending on the season, the control target, the target plants and the growth stage, the application rates of the growth-regulating compositions of the formula I are, when used to regulate growth, from 0.001 to 5.0, preferably from 0.01 to 1.0, kg of active substance (a.s.)/ha:

The compounds of the formula I are capable of influencing virtually all development stages of a plant in various ways and are therefore used as growth regulators. The wide range of activity of the plant growth regualtors depends in particular

a) on the plant species and variety;

b) on the time of application, based on the stage of development of the plant, and on the season;

c) on the site of application and method of application, for example (seed dressing, soil treatment, foliage application or trunk injection in the case of trees

d) on climatic factors, for example temperature, amount of precipitation and also length of day and intensity of light;

e) on the soil characteristics (including fertilizer application),

f) on the formulation or application form of the growth-regulating composition of the formula I and finally

g) on the concentrations in which the active substance is used.

Of the number of different possible methods of application of the compound I as growth regulator in plant cultivation, in

agriculture and in horticulture, some are stated below.

A. The compounds which can be used according to the invention permit considerable inhibition of the vegetative growth of the plants, which is evident in particular from a reduction in the growth in length. Accordingly, the treated plants exhibit stunted growth; in addition, a dark leaf coloration is observed. Reduced intensity of the growth of grasses at the edges of roads, in hedges, on canal embankments and on lawn areas such as parks, sports facilities, orchards, ornamental lawns and airfields, proves advantageous in practice, making it possible to reduce the labor-intensive and expensive cutting of grass.

The increase in the stability of crops susceptible to lodging, such as cereals, corn, sunflowers and soybean, is also of economic interest. The resulting shortening and strengthening of the stem reduce or eliminate the danger of lodging (bending) of plants under unfavorable weather conditions prior to harvesting.

The use of growth regulators for inhibiting the growth in length and for changing the time of ripening of cotton is also important. This permits completely mechanized harvesting of this important crop.

In the case of fruit trees and other trees, the growth regulators can be used to save pruning costs. In addition, the alternate bearing of fruit trees can be broken by means of growth regulators.

By using growth regulators, it is also possible to increase or inhibit the lateral branching of the plants. This is of interest when, for example in the case of tobacco plants, it is intended to inhibit the formation of side shoots in favor of leaf growth.

Growth regulators can also be used to effect a considerable increase in frost resistance, for example in the case of winter rape. On the one hand, the growth in length and the development to form a leaf or plant mass which is excessively luxuriant (and therefore particularly susceptible to frost) are inhibited. On the other hand, the young rape plants are held back in the vegetative stage of development after sowing and prior to the onset of the winter frosts, in spite of favorable growth conditions. This also eliminates the danger of frost damage to plants which tend toward a premature decline in the inhibition of blooming and toward a transition into the generative phase. In other crops too, for example winter cereals, it is advantageous

if the crops are well tillered as a result of treatment with novel compounds in the fall but do not begin the winter with excessively luxuriant foliage. Increased sensitivity to frost and, owing to the relatively small leaf or plant mass, attack by various diseases (for example fungal disease) can thus be prevented. In addition, the inhibition of vegetative growth permits denser planting of the soil in the case of many crops, so that it is possible to achieve a higher yield, based on the soil area.

B. With the compounds of the formula I, it is possible to achieve higher yields of both plant parts and plant ingredients. Thus, it is possible, for example, to induce the growth of larger amounts of buds, blooms, leaves, fruits, seeds, roots and tubers, to increase the content of sugar in sugar beets, sugar cane and citrus fruits, to increase the protein content of cereals or soybean or to stimulate greater latex flow in rubber trees. The compounds of the formula I can produce increases in the yield by intervening in the metabolism of the plant or by promoting or inhibiting the vegetative and/or generative growth.

C. Finally, plant growth regulators can be used both for shortening or lengthening the stages of development and for accelerating or slowing down the ripening of the plant parts to be harvested prior to the harvest or of the harvested plant parts after harvesting.
For example, facilitating harvesting is of commercial interest and is permitted by concentrated dropping of fruit or a reduction of the strength of attachment to the tree in the case of citrus fruits, olives or other species and varieties of pomes, drupes and shell fruit. The same mechanism, ie. the promotion of the formation of abscission tissue between fruit part or leaf part and shoot part of the plant is also essential for readily controllable defoliation of useful plants, for example cotton.

D. Furthermore, the compounds of the formula I can be used to reduce the water consumption of plants. This is particularly important for agriculturally useful areas which have to be irrigated at high cost, for example in arid or semiarid regions. By using the novel substances, it is possible to reduce the intensity of irrigation and hence to carry out more economical farming. Under the influence of the compounds of the formula I, better utilization of the available water is achieved because, inter alia,
- the extent of opening of the stomata is reduced
- a thicker epidermis and cuticle are formed

- the root penetration of the soil is improved and
- the microclimate in the crop is advantageously influenced by more compact growth.

The compounds of the formula I which are to be used according to the invention as growth regulators can be fed to the crops both via the seed (as seed dressing) and via the soil, i.e. through the roots and, particularly preferably, via the foliage by spraying.

To widen the activity spectrum and to achieve synergistic effects, the phenylalanine derivatives of the formula I may be mixed with a large number of representatives of other herbicidal or growth-regulating active compound groups and then applied concomitantly. Suitable components for mixtures are, for example, 1,2,4-thiadiazoles, 1,3,4-thiadiazoles, amides, aminophosphoric acid and its derivatives, aminotriazoles, anilides, (het)aryloxy-alkanoic acids and their derivatives, benzoic acid and its derivatives, benzothiadiazinones, 2-(aroyl/hetaroyl)-1,3-cyclo-hexanediones, hetaryl aryl ketones, benzylisoxazolidinones, meta-CF_3-phenyl derivatives, carbamates, quinolinecarboxylic acid and its derivatives, chloroacetanilides, cyclohexenone oxime ether derivatives, diazines, dichloropropionic acid and its derivatives, dihydrobenzofurans, dihydrofuran-3-ones, dinitro-anilines, dinitrophenols, diphenyl ethers, dipyridyls, halocarboxylic acids and their derivatives, ureas, 3-phenyl-uracils, imidazoles, imidazolinones, N-phenyl-3,4,5,6-tetra-hydrophthalimides, oxadiazoles, oxiranes, phenols, aryloxy- and heteroaryloxyphenoxypropionic esters, phenylacetic acid and its derivatives, phenylpropionic acid and its derivatives, pyrazoles, phenylpyrazoles, pyridazines, pyridinecarboxylic acid and its derivatives, pyrimidyl ethers, sulfonamides, sulfonylureas, triazines, triazinones, triazolinones, triazolecarboxamides and uracils.

It may furthermore be advantageous to apply the compounds of the formula I, alone or else concomitantly in combination with other herbicides, or in the form of a mixture with other crop protection agents, for example together with agents for controlling pests or phytopathogenic fungi or bacteria. Also of interest is the miscibility with mineral salt solutions, which are employed for treating nutritional and trace element deficiencies. Non-phytotoxic oils and oil concentrates may also be added.

The application rates of the active compound are from 0.001 to 3.0, preferably from 0.01 to 1.0 kg/ha of active substance (a.s.), depending on the control target, the season, the target plants and the growth stage.

Preparation Examples

Preparation of the compound I-44

A) Reductive amination of a polymer resin

20 g of 4-(4-formyl-3-methoxyphenoxy)butyryl-aminomethylpolystyrene resin were initially charged in 200 ml of dimethylformamide and 2 ml of acetic acid, 49 ml of methylamine, 10.7 ml of trimethyl orthoformate and 6.2 g of sodium cyanoborhydride were added and the mixture was shaken at 50°C for 18 hours. After cooling to room temperature, the resin was filtered off, washed with in each case 100 ml of dimethylformamide (2x), methanol (1x), tetrahydrofuran (3x) and dichloromethane (3x) and dried at room temperature.

B) N-Acylation using a substituted phenylalanine derivative

5 g of the resin prepared in step A were initially charged in 50 ml of dichloromethan/dimethylformamide 1:1, 4.4 g of Fmoc-2-fluorophenylalanine and 5.6 g of benzotriazol-1-yloxy-trispyrrolidinophosphonium hexafluorophosphate (PyBOP) were added and the mixture was shaken at room temperature for 5 min. 1.9 ml of N-methylmorpholine were then added, and the mixture was shaken at room temperature for 18 hours. The resin was filtered off and then washed with in each case 20 ml of dimethylformamide (5x).

C) Removal of the protective group X

To remove the Fmoc protective group, the resin was suspended in 50 ml of dimethylformamide/piperidine 1:1 and shaken at room temperature for 1 h. The resin was then filtered off and washed with in each case 20 ml of dimethylformamide (2x), methanol (1x), tetrahydrofuran (3x) and dichloromethane (3x). The resin was dried at room temperature.

D) N-Acylation

250 mg of the resin from step C, 133 mg of 2,4-dichloro-3-(difluoromethyl)benzoic acid and 286 mg of benzotriazol-1-yloxytrispyrrolidinophosphonium

hexafluorophosphate (PyBOP) were initially charged in dichloromethane/dimethylformamide 1:1 (2.5 ml). After 5 minutes of shaking, 97 µl of N-methylmorpholine were added, and the mixture was shaken at room temperature for 18 h. The resin was then filtered off and washed with in each case 3 ml of dimethylformamide (2x), methanol (1x), tetrahydrofuran (3x) and dichloromethane (3x). To cleave the product from the solid support, about 2 ml of trifluoroacetic acid/dichloromethane 1:3 were added to the resin. The mixture was shaken for 30 min and then filtered, and the filtrate was concentrated for further use.

*) 2,4-Dichloro-3-(difluoromethyl)benzoic acid was prepared as follows: Reaction of 1,3-dichloro-2-methylbenzene with acetyl chloride and subsequent oxidation to give 1,3-dichloro-2-methylbenzoic acid, conversion of the benzoic acid into the methyl ester, followed by bromination of the methyl group located in position 2, oxidation of the brominated methyl group to give the corresponding aldehyde, fluorination of the resulting product with diethylaminosulfur trifluoride and subsequent hydrolysis of the resulting methyl 2,4-dichloro-2-difluoromethylbenzoate to give 2,4-dichloro-3-(difluoromethyl)benzoic acid.

Yield: 48%

Preparation of the compound I-32 by process 4

Step A

13.8 ml of triethylamine were added to 5.29 g of diethyl aminomalonate hydrochloride in 100 ml of dichloromethane. With ice-cooling, trifluoromethylbenzoyl chloride was added to the resulting suspension, which was then shaken at room temperature overnight. The mixture was then extracted with 50 ml of water and the organic phase was separated off and dried over magnesium sulfate.

Step B

0.8 g of 1-(2-fluorophenyl)ethyl methanesulfonate *) and 0.673 g of potassium tert-butoxide were added to 1.27 g of the ester formed in step A in 20 ml of dioxane, and the mixture was incubated at 80°C with shaking overnight. Water was then added at room temperature, followed by extraction with dichloromethane and subsequent drying over magnesium sulfate.

*)1-(2-fluorophenyl)ethyl methanesulfonate was prepared from 1-(2-fluorophenyl)ethanol by reaction with methanesulfonic anhydride.

Step C

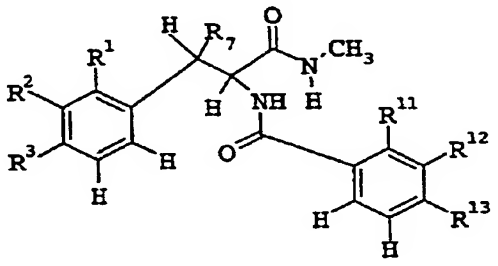
1 ml of concentrated (about 45% by weight strength) aqueous sodium hydroxide solution was added to 0.8 g of the diester formed in step B in 10 ml of dioxane, and the mixture was incubated at 80°C with stirring overnight. Water was then added at room temperature. Following addition of hydrochloric acid until a pH of 2 had been reached, the mixture was extracted with ethyl acetate and the organic phase was separated off and concentrated.

Step D

3.58 g of polymer-bound DCC and 0.315 g of methylamine (40% by volume in water) were added to 0.75 g of the acid formed in step C, the mixture was shaken at room temperature overnight and the resin was filtered off.

The compounds listed in Table I below were prepared by appropriate modification of the process described above. The compounds II required for the synthesis of the compounds were obtained from Fluka and Advanced Chem Tech, the substituted benzoic acids V and the substituted benzoyl chlorides VI were obtained from Aldrich and ABCR and the amines IX were obtained from from Aldrich.

The resulting phenylalanine derivatives of the formula I where R^4, R^5, R^6, R^8, R^{14} and R^{15} = hydrogen and R^9 = methyl, as shown below,



are listed in Table I together with physical data and the mass signal (M+). The measurements were carried out by by LC-MS (HP-1100, Agilent) using the following conditions:

LC-MS conditions:
Buffer A (isopropanol, 0.05% trifluoroacetic acid)
Buffer B (water, 0.05% trifluoroaceetic acid)
Flow rate: 1.2 ml/min
Injection volume: 2 µl
Fragmentation voltage: 20V, positive ionization
mass range (m/z): 130-700
Column: Merck ROD column (50 x 4.6 mm)

N_2 detection:
(Method UV-MS-N_2)
Injection volume: 5 µl
Fragmentation voltage: 20V, positive ionization
mass range (m/z): 130-700

Preparation of compound II-15 by process 5

Preparation of the intermediate 1-(2-fluorophenyl)-1-bromopropane

Step 1

At -20°C, 100 ml of a 1 M solution of ethylmagnesium bromide in THF were added to 10.0 g (0.081 mol) of 2-F-benzaldehyde in 150 ml of THF, the mixture was incubated with stirring for 1.5 h and 100 ml of saturated NH_4Cl solution was added dropwise. The mixture was saturated with NaCl and the organic phase was then separated off, the aqueous phase was extracted with ethyl acetate and the combined organic phases were concentrated.

1H-NMR signals ($CDCl_3$): 7.6-7.0 (m, 4 H), 5.0 (t, 1 H), 2.0 br.s. 1 H), 1.8 (m, 2 H), 1.0 (t, 3 H)

Yield: 11.2 g as a crude product of a purity of about 70% which was used without further purification for step 2

Step 2

11.2 g of the 1-(2-fluorophenyl)-1-bromopropane obtained in step 1 were dissolved in 150 ml of CH_2Cl_2, 90 ml of a 1 M solution of BBr3 in CH_2Cl_2 were added at 0°C and the mixture was, after 1 h at 0°C, poured into ice-water. The organic phase was removed and the aqueous phase was then extracted with CH_2Cl_2, and the combined organic phases were concentrated.

1H-NMR signals (CDCl3): 7.4-7.0 (m, 4 H), 5.3 (m, 1 H), 2.3 (m, 1 H), 2.1 (m, 1 H), 1.0 (t, 3 H)

Yield: 14.2 g of the title compound, which was reacted further as a crude product of a purity of about 85%

Preparation of Nα-(2-trifluoromethyl-4-fluorobenzoyl)-2-(1-methyl-1-(2-fluorophenyl))glycine-N-methylamide (compound II-15)

Step 1

8.61 g of ethyl diphenylmethylideneglycinate, 7.0 g of 1-(1-bromopropyl)-2-fluorobenzene, 13.6 g (0.1 mol) of K2CO3 and 1.06 g (0.003 mol) of tetrabutylammonium bromide in 200 ml of acetonitrile were stirred under reflux for 43 h, cooled and filtered off. After concentration, the filtrate was dissolved in 150 ml of THF and stirred with 150 ml of 10% strength citric acid until the conversion was complete. After removal of the THF, the mixture was extracted with MTBE (methyl tert-butyl ether), the aqueous phase was saturated with K_2CO_3 and the product was extracted 3 times with in each case 100 ml of ethyl acetate. Drying and concentration gave 4.92.4 g of crude product which was used without further purification for the next step.

Step 2

2.4 g of the ethyl 2-(1-methyl-1-(2-(-fluorophenyl))glyinate from step 1 were dissolved in 100 ml of methylene chloride, 3.48 g of NEt3 were added and, at 0°C, 1.27 g (0.01 mol) of 2-trifluoromethyl-4-F-benzoyl chloride were added dropwise. The mixture was stirred at room temperature for 16 h and then diluted with 200 ml of ethyl acetate and washed with in each case 100 ml of 1N HCl and water, and the organic phase was removed under reduced pressure. Chromatographic separation on silica gel (mobile phase cyclohexane/ethyl acetate 8/1) gave 0.7 g of the pure diastereomer A of ethyl Nα-(2-trifluoromethyl-4-fluorobenzoyl)-2-(1-methyl-1-(2-fluorophenyl))glycinate, 0.22 g of a 1:1 mixture of the two diastereomers A and B of ethyl Nα-(2-trifluoromethyl-4-fluorobenzoyl)-2-(1-methyl-1-(2-fluorophenyl))glycinate and 0.6 g of the diastereomer B of ethyl Nα-(2-trifluoromethyl-4-fluorobenzoyl)-2-(1-methyl-1-(2-fluorophenyl))glycinate. Diastereomers A and B were separately characterized by spectroscopy, and all three fractions were then combined for the further conversion in step 3 to 1.55 g of a 1:1 diastereomer mixture.

Signals in the 1H-NMR ($CDCl_3$) of diastereomer A ethyl (Nα-(2-trifluoromethyl-4-fluorobenzoyl)-2-(1-methyl-1-(2-fluorophenyl))glycinate): 7.5-7.0 (m, 7 H), 6.1 (br. d 1H), 5.1 (m, 1

H), 4.3 (m, 2 H), 3.5 (m, 1 H9, 2.1-2.0 (m, 2 H), 1.3 (t, 3 H), 1.0 (t, 3 H).

Signals in the 1H-NMR ($CDCl_3$): of diastereomer B ethyl (Nα-(2-trifluoromethyl-4-fluorobenzoyl)-2-(1-methyl-1-(2-fluorophenyl))glycinate): 7.6 -7.0 (m, 7 H), 6.3 (br. d, 1 H), 5.1 (m, 1 H), 4.1 (m, 2 H), 3.3 (m, 1 H), 2.0 (mc 2 H), 1.1 (t, 3 H), 0.8 (t, 3 H).

Step 3

1.5 g of the diastereomer mixture formed in step 2 were dissolved in 100 ml of ethanol. Subsequently, gaseous methylamine was added to the solution until saturation had been reached. After 4 days of stirring at room temperature, the mixture was concentrated and 200 ml of MTBE were added. The resulting solid was filtered off and dried. The resulting product was a 1:1 mixture of the diastereomers of compound II-15.

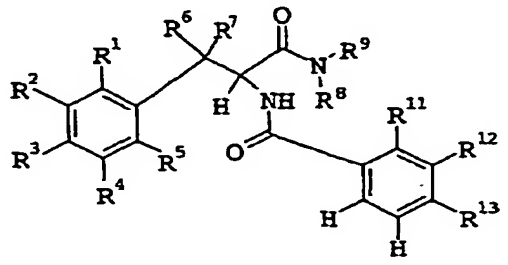
Yield: 0.261 g

Melting point: 201-202°C

1H-NMR signals (d6-DMSO): 9.0 (br. d, 1 H), 8.7 (d, 1 H), 8.2 (d, 1 H), 7.8-7.1 (m, 14 H), 6.8 (m, 1 H), 4.9 (m, 1 H), 4.8 (m, 1 H), 3.3 (m, 2 H), 1.9 (m, 1 H), 1.6 (m, 3 H) 2.6 (d, 3 H), 2.4 (d, 3 H), 0.8 (m, 6 H).

The compounds listed in table II below were prepared by modifying the process described above in an appropriate manner. The starting materials required for synthesizing the compounds were obtained from Fluka and Advanced Chem Tech, the substituted benzoic acids V and the substituted benzoyl chlorides VI from Aldrich and ABCR and the amines IX from from Aldrich.

The resulting phenylalanine derivatives of the formula I where R^9, R^{10}, R^{14} and R^{15} = hydrogen as shown below



are [lacuna] in table II together with the melting point or physical data (mass signal (M+) and LC-MS mesurements using conditions a or i).

LC-MS conditions a:
Buffer A (acetonitrile, 0.1% trifluoroacetic acid)
Buffer B (water, 0.1% trifluoroacetic acid)
Flow rate: 1.8 ml/min
Temperature: 80°C
Injection volume: 2 µl
Fragmentation voltage: 80V, positive ionization,
mass range (m/z): 100-700
Column: Merck ROD column (50 x 4.6 mm)

LC-MS conditions i:
Buffer A (isopropanol, 0.05% trifluoroacetic acid)
Buffer B (water 0.05% trifluoroacetic acid)
Flow rate: 1.5 ml/min
Injection volume: 2 µl
Temperature: 40°C
Fragmentation voltage: 20V, positive ionization
mass range (m/z): 130-700
Column: Merck ROD column (50 x 4.6 mm)

Table I

No.	R^1	R^2	R^3	R^7	R^{11}	R^{12}	R^{13}	R^{14}	Configuration	M+
I-1	F	H	H	H	F	H	H	H	Racemate	319
I-2	F	H	H	H	Cl	Cl	H	H	Racemate	369
I-3	F	H	H	H	CF_3	H	H	H	Racemate	369
I-4	H	F	H	H	F	H	H	H	Racemate	319
I-5	H	F	H	H	Cl	Cl	H	H	Racemate	370
I-6	H	F	H	H	Br	H	H	H	Racemate	380
I-7	H	F	H	H	CF_3	H	H	H	Racemate	369
I-8	H	Cl	H	H	F	H	H	H	Racemate	335
I-9	H	Cl	H	H	Cl	Cl	H	H	Racemate	386
I-10	H	Cl	H	H	Br	H	H	H	Racemate	396
I-11	H	Cl	H	H	CF_3	H	H	H	Racemate	384
I-12	Cl	H	H	H	F	H	H	H	Racemate	335
I-13	Cl	H	H	H	Cl	Cl	H	H	Racemate	386
I-14	Cl	H	H	H	Br	H	H	H	Racemate	396
I-15	Cl	H	H	H	CF_3	H	H	H	Racemate	385
I-16	CH_3	H	H	H	F	H	H	H	Racemate	315
I-17	CH_3	H	H	H	Cl	Cl	H	H	Racemate	366
I-18	CH_3	H	H	H	Br	H	H	H	Racemate	376
I-19	CH_3	H	H	H	CF_3	H	H	H	S	365
I-20	H	CH_3	H	H	F	H	H	H	Racemate	315
I-21	H	CH_3	H	H	Cl	Cl	H	H	Racemate	366
I-22	H	CH_3	H	H	Br	H	H	H	Racemate	376
I-23	H	CH_3	H	H	CF_3	H	H	H	Racemate	365
I-24	H	F	H	H	CF_3	F	H	H	S	387
I-25	H	F	H	H	CF_3	H	H	F	S	387
I-26	H	H	H	H	CF_3	H	H	H	S	351
I-27	H	H	H	H	Cl	Cl	H	H	Racemate	352
I-28	CH_3	H	H	H	CF_3	H	H	H	Racemate	365
I-29	CH_3	H	H	H	Cl	Cl	H	H	Racemate	366
I-30	F	H	H	H	CF_3	H	H	H	R	369
I-31	F	H	H	H	Cl	Cl	H	H	R	370
I-32	F	H	H	CH_3	CF_3	H	H	H	Diastereomer	383
I-33	CH_3	H	H	H	Cl	CF_3	H	H	Racemate	399
I-34	CH_3	H	H	H	CF_3	H	F	H	Racemate	383
I-35	CH_3	H	H	H	CF_3	F	H	H	Racemate	383
I-36	H	H	F	H	CF_3	H	H	H	Racemate	369
I-37	H	H	Cl	H	CF_3	H	H	H	Racemate	385

No.	R^1	R^2	R^3	R^7	R^{11}	R^{12}	R^{13}	R^{14}	Configuration	M+
I-38	H	H	F	H	Cl	Cl	H	H	Racemate	370
I-39	H	H	Cl	H	Cl	Cl	H	H	Racemate	386
I-40	F	H	H	H	Cl	CF_3	H	H	S	403
I-41	F	H	H	H	Cl	H	NO_2	H	S	380
I-42	F	H	H	H	Cl	H	SO_2CH_3	H	S	413
I-43	F	H	H	H	Cl	CN	OCH_3	H	S	390
I-44	F	H	H	H	Cl	CHF_2	Cl	H	S	420
I-45	F	H	H	H	Cl	CH_3	NO_2	H	S	394
I-46	CH_3	H	H	H	Cl	H	NO_2	H	S	376
I-47	CH_3	H	H	H	Cl	H	SO_2CH_3	H	S	409
I-48	CH_3	H	H	H	Cl	CN	OCH_3	H	S	386
I-49	CH_3	H	H	H	Cl	CHF_2	Cl	H	S	416
I-50	CH_3	H	H	H	Cl	CH_3	NO_2	H	S	390
I-51	CH_3	H	H	H	CF_3	H	F	H	S	383
I-52	CH_3	H	H	H	Cl	CF_3	H	H	S	399
I-53	CH_3	H	H	H	CF_3	F	H	H	S	383
I-54	F	H	H	H	CF_3	H	H	H	S	369
I-55	F	H	H	H	Cl	Cl	H	H	S	370
I-56	F	H	H	H	Cl	H	Cl	H	S	370
I-57	F	H	H	H	Cl	H	F	H	S	353
I-58	CF_3	H	H	H	CF_3	H	H	H	S	419
I-59	CF_3	H	H	H	Cl	Cl	H	H	S	419
I-60	CH_3	H	H	H	Cl	H	Cl	H	S	365
I-61	CH_3	H	H	H	Cl	H	F	H	S	349

Table II

No.	R^1	R^2	R^3	R^4	R^5	R^6	R^7	R^8	R^9	R^{11}	R^{12}	R^{13}	M+H+	LC-MS cond.	m.p. [°C]
II-1	F	OCH_3	H	H	H	H	H	CH_3	H	CF_3	H	F			208-209
II-2	H	H	H	CF_3	H	H	H	CH_3	H	CF_3	H	F			219-220
II-3	F	H	H	H	H	CH_3	H	CH_3	H	CF_3	H	H			192-193
II-4	F	H	H	H	H	H	CH_3	CH_3	H	CF_3	H	H			231-132
II-5	CH_2CH_3	H	H	H	H	H	H	CH_3	H	CF_3	H	F			198-199
II-6	F	H	H	H	H	CH_3	H	CH_3	H	CF_3	H	F			203-204
II-7	F	H	H	H	H	H	CH_3	CH_3	H	CF_3	H	F			213-215
II-8	CH_3	H	H	H	H	CH_3	H	CH_3	H	CF_3	H	H			214-215
II-9	CH_3	H	H	H	H	H	CH_3	CH_3	H	CF_3	H	H			260
II-10	CH_3	H	H	H	H	CH_3	H	CH_3	H	CF_3	H	F			200-201
II-11	F	H	H	H	H	$(CH_2)_3$ CH_3	H	CH_3	H	CF_3	H	H			204
II-12	F	H	H	H	H	$(CH_2)_2$ CH_3	H	CH_3	H	CF_3	H	F			206-210
II-13	CH_3	H	H	H	H	$(CH_2)_2$ CH_3	H	CH_3	H	CF_3	H	F			235-237
II-14	CH_3	H	H	H	H	CH_2CH_3	H	CH_3	H	CF_3	H	F			220-222
II-15	F	H	H	H	H	CH_2CH_3	H	CH_3	H	CF_3	H	F			201-202
II-16	F	H	H	H	H	CH_2CH_3	H	CH_3	H	CF_3	H	H			195-196
II-17	CH_3	H	H	H	H	CH_2CH_3	H	CH_3	H	CF_3	H	H			228-230
II-18	CH_3	H	H	H	CH_3	H	H	CH_3	H	CF_3	H	H			224

No.	R^1	R^2	R^3	R^4	R^5	R^6	R^7	R^8	R^9	R^{11}	R^{12}	R^{13}	M+H+	LC-MS cond.	m.p. [°C]
II-19	Br	H	H	H	H	H	H	CH_3	H	CF_3	H	H	430.2	a	
II-20	Cl	Cl	H	H	Cl	H	H	CH_3	H	CF_3	H	H	454.1	a	
II-21	F	H	H	H	H	$(CH_2)_3$ CH_3	H	CH_3	H	CF_3	H	F			198-200
II-22	F	H	H	H	H	$(CH_2)_3$ CH_3	H	CH_3	H	CF_3	H	F			215-218
II-23	F	H	H	H	Cl	H	H	CH_3	H	CF_3	H	H			205-207
II-24	F	H	H	H	Cl	H	H	CH_3	H	CF_3	H	F			215-216
II-25	H	H	H	H	H	CH_2CH_3	H	CH_3	H	CF_3	H	H			205-206
II-26	OH	H	H	H	H	H	H	CH_3	H	CF_3	H	F			215-216
II-27	CF_3	H	F	H	H	H	H	CH_3	H	CF_3	H	F			210-211
II-28	Cl	Cl	OCH_3	H	H	H	H	CH_3	H	CF_3	H	F			253-254
II-29	Cl	Cl	OCH_3	H	H	H	H	CH_3	H	CF_3	H	H			236-237
II-30	F	H	Cl	H	H	H	H	CH_3	H	CF_3	H	F			209-210
II-31	F	H	Cl	H	H	H	H	CH_3	H	CF_3	H	H			220-221
II-32	OCH_3	H	OCH_3	H	H	H	H	CH_3	H	CF_3	H	H			229-230
II-33	OCH_3	H	H	OCH_3	H	H	H	CH_3	H	CF_3	H	F			226-227
II-34	Et	H	H	H	H	H	H	CH_3	H	CF_3	H	F			188-190
II-35	OCH_3	H	H	H	H	H	H	CH_3	H	CF_3	H	H			216-217
II-36	OCH_3	H	H	H	H	H	H	CH_3	H	CF_3	H	F			196-197
II-37	NO_2	H	H	H	Cl	H	H	CH_3	H	CF_3	H	F			203-204
II-38	NO_2	H	H	H	Cl	H	H	CH_3	H	CF_3	H	H			212-214
II-39	H	CF_3	H	CF_3	H	H	H	CH_3	H	CF_3	H	H	487.1	a	

No.	R^1	R^2	R^3	R^4	R^5	R^6	R^7	R^8	R^9	R^{11}	R^{12}	R^{13}	M+H+	LC-MS cond.	m.p. [°C]
II-40	H	CH_3	H	CH_3	H	H	H	CH_3	H	CF_3	H	H	379.1	a	
II-41	F	F	H	H	H	H	H	CH_3	H	CF_3	H	H	387.1	a	
II-42	H	H	H	H	H	H	H	$CH_2C(CH)_2$	H	CF_3	H	F	393.1	a	
II-43	H	H	H	H	H	H	H	$CH_2CH(CH_3)_2$	H	CF_3	H	F	395.0	a	
II-44	H	H	H	H	H	H	H	$CH_2CH(CH_3)_2$	H	CF_3	H	H	375.1	a	
II-45	H	H	H	H	H	H	H	$CH_2CH(CH_3)_2$	H	CF_3	H	H	377.1	a	
II-46	F	H	H	F	Cl	H	H	CH_3	H	CF_3	H	H	421.0	a	
II-47	H	CF_3	H	F	H	H	H	CH_3	H	CF_3	H	H	437.1	a	
II-48	SCF_3	H	H	H	H	H	H	CH_3	H	CF_3	H	H	451.1	a	
II-49	H	Br	H	H	H	H	H	CH_3	H	CF_3	H	H	429.0	a	
II-50	H	F	H	F	H	H	H	CH_3	H	CF_3	H	H	387.1	a	
II-51	F	H	H	Cl	H	H	H	CH_3	H	CF_3	H	H	403.1	a	
II-52	F	H	H	CF_3	H	H	H	CH_3	H	CF_3	H	H	437.1	a	
II-53	Br	H	H	F	H	H	H	CH_3	H	CF_3	H	H	449.0	a	
II-54	H	$OCHF_2$	H	H	H	H	H	CH_3	H	CF_3	H	H	417.1	a	
II-55	F	Cl	H	CF_3	H	H	H	CH_3	H	CF_3	H	H	471.0	a	
II-56	F	CH_3	H	H	F	H	H	CH_3	H	CF_3	H	H	401.1	a	
II-57	F	F	H	F	H	H	H	CH_3	H	CF_3	H	H	405.1	a	
II-58	Cl	H	H	CF_3	H	H	H	CH_3	H	CF_3	H	H	453.0	a	
II-59	H	SCF_3	H	H	H	H	H	CH_3	H	CF_3	H	H	451.0	a	
II-60	F	H	H	F	H	H	H	CH_3	H	CF_3	H	H	387.1	a	
II-61	NO_2	H	H	CH_3	H	H	H	CH_3	H	CF_3	H	H	410.1	a	

No.	R^1	R^2	R^3	R^4	R^5	R^6	R^7	R^8	R^9	R^{11}	R^{12}	R^{13}	M+H+	LC-MS cond.	m.p. [°C]
II-62	F	Cl	H	H	H	H	H	CH_3	H	CF_3	H	H	403.1	a	
II-63	Cl	H	H	H	Cl	H	H	CH_3	H	CF_3	H	H	419.0	a	
II-64	H	OCH_3	H	H	H	H	H	CH_3	H	CF_3	H	H	381.1	a	
II-65	H	OCF_3	H	H	H	H	H	CH_3	H	CF_3	H	H	435.1	a	
II-66	Cl	CF_3	H	H	H	H	H	CH_3	H	CF_3	H	H	453.1	a	
II-67	NO_2	Cl	H	H	H	H	H	CH_3	H	CF_3	H	H	430.0	a	
II-68	NO_2	H	H	H	H	H	H	CH_3	H	CF_3	H	H	396.1	a	
II-69	H	OCH_3	H	OCH_3	H	H	H	CH_3	H	CF_3	H	H	411.1	a	
II-70	Cl	$CH(CH_3)_2$	H	H	H	H	H	CH_3	H	CF_3	H	H	427.1	a	
II-71	CH_3	H	H	NO_2	H	H	H	CH_3	H	CF_3	H	H	410.1	a	
II-72	F	H	H	H	F	H	H	CH_3	H	CF_3	H	H			200-201
II-73	Cl	OCH_3	H	OCH_3	Cl	H	H	CH_3	H	CF_3	H	H			229-230
II-74	Cl	OCH_3	H	OCH_3	H	H	H	CH_3	H	CF_3	H	H			220-221
II-75	CN	H	H	H	H	H	H	CH_3	H	CF_3	H	H			232-233
II-76	$OCHF_2$	H	H	H	H	H	H	CH_3	H	CF_3	H	H			187-188
II-77	CH_3	CF_3	H	H	H	H	H	CH_3	H	CF_3	H	F	451.4	i	
II-78	F	CH_3	H	H	H	H	H	CH_3	H	CF_3	H	F	401.4	i	
II-79	CH_3	H	H	CH_3	H	H	H	CH_3	H	CF_3	H	F	397.4	i	
II-80	H	CH_3	H	H	H	H	H	CH_3	H	CF_3	H	F	383.4	i	
II-81	F	CF_3	H	H	H	H	H	CH_3	H	CF_3	H	F	455.4	i	
II-82	$CH(CH_3)_2$	H	H	H	H	H	H	CH_3	H	CF_3	H	F	411.4	i	
II-83	CF_3	H	H	H	H	H	H	CH_3	H	CF_3	H	F	455.4	i	

No.	R^1	R^2	R^3	R^4	R^5	R^6	R^7	R^8	R^9	R^{11}	R^{12}	R^{13}	M+H+	LC-MS cond.	m.p. [°C]
II-84	CH_3	CH_3	H	CH_3	CH_3	H	H	CH_3	H	CF_3	H	F	425.4	i	
II-85	CH_3	H	H	H	CH_3	H	H	CH_3	H	CF_3	H	F	397.4	i	
II-86	CH_3	H	H	F	H	H	H	CH_3	H	CF_3	H	F	401.4	i	
II-87	CH_3	Cl	H	H	H	H	H	CH_3	H	CF_3	H	H			223-224
II-88	CH_3	H	H	CH_3	H	H	H	CH_3	H	CF_3	H	H	379.4	i	
II-89	F	CH_3	H	H	H	H	H	CH_3	H	CF_3	H	H	437.4	i	
II-90	H	H	H	H	H	H	H	CH_3	H	CF_3	H	H	365.1	a	
II-91	H	H	H	H	H	H	H	CH_3	H	CF_3	H	F	369.1	a	
II-92	H	H	H	F	H	H	H	OH	H	CF_3	H	H	320.1	a	
II-93	H	H	H	F	H	H	H	OCH_3	H	CF_3	H	H	320.1	a	
II-94	H	H	H	H	H	H	H	OH	CH_3	CF_3	H	F	338.1	a	
II-95	H	H	H	F	H	H	H	OCH_3	H	CF_3	H	F	338.1	a	
II-96	F	H	H	F	H	H	H	OH	H	CF_3	H	F	352.0	a	
II-97	H	H	H	F	H	H	H	OCH_3	H	CF_3	H	H	320.0	a	
II-98	H	H	H	F	H	H	H	OH	H	CF_3	H	F	338.0	a	
II-99	F	H	H	F	H	H	H	OH	H	CF_3	H	F	358.1	a	
II-100	F	H	H	F	H	H	H	CH_3	H	CF_3	H	F	389.0	a	
II-101	H	F	H	H	H	H	H	CH_3	H	F	H	H	305.1	a	
II-102	H	H	H	H	H	H	H	CH_3	H	F	CF_3	H	369.1	a	
II-103	H	H	H	H	H	H	H	CH_3	H	F	F	H	319.1	a	
II-104	CH_3	H	H	H	H	H	H	CH_3	H	Cl	Cl	H	352.1	a	
II-105	F	H	H	H	H	H	H	CH_3	H	Cl	Cl	H	356.1	a	

No.	R^1	R^2	R^3	R^4	R^5	R^6	R^7	R^8	R^9	R^{11}	R^{12}	R^{13}	M+H+	LC-MS cond.	m.p. [°C]
II-106	H	H	H	H	H	H	H	CH_3	H	Cl	Cl	H	352.1	a	
II-107	CH_3	H	H	F	H	H	H	CH_3	H	Cl	CF_3	H	398.81	a	
II-108	F	H	H	H	H	H	H	CH_3	H	Cl	H	Cl	370.0	a	
II-109	F	H	H	F	H	H	H	CH_3	H	Cl	Cl	F	353.0	a	
II-110	H	H	H	H	H	H	H	CH_3	H	Cl	H	Cl	352.1	a	
II-111	CH_3	H	H	H	H	H	H	CH_3	H	SO_2CH_3	H	H	375.1	a	
II-112	CH_3	H	H	H	H	H	H	CH_3	H	SO_2CHF_2	H	H	379.0	a	
II-113	CH_3	H	H	H	H	CH_3	H	CH_3	H	Cl	CF_3	H	413.84	a	

Use Examples for herbicidal action

The herbicidal activity of the phenylalanine derivatives of the formula I was demonstrated by greenhouse experiments:

The cultivation containers used were plastic pots containing loamy sand with approximately 3.0% of humus as the substrate. The seeds of the test plants were sown separately for each species.

For the pre-emergence treatment, directly after sowing, the active compounds, which had been suspended or emulsified in water, were applied by means of finely distributing nozzles. The containers were irrigated gently to promote germination and growth and subsequently covered with transparent plastic hoods until the plants had rooted. This cover caused uniform germination of the test plants, unless this was adversely affected by the active compounds.

For the post-emergence treatment, the test plants were first grown to a height of from 3 to 15 cm, depending on the plant habit, and only then treated with the active compounds which had been suspended or emulsified in water. The test plants were for this purpose either sown directly and grown in the same containers, or they were first grown separately as seedlings and transplanted into the test containers a few days prior to treatment. The application rate for the post-emergence treatment was 0.095, 0.5 or 1.91 kg of a.s. (active substance).

Depending on the species, the plants were kept at 10-25°C or 20-35°C. The test period extended over from 2 to 4 weeks. During this time, the plants were tended, and their response to the individual treatments was evaluated.

Evaluation was carried out using a scale from 0 to 100. 100 means no emergence of the plants, or complete destruction of at least the aerial parts and 0 means no damage, or normal course of growth.

The plants used in the greenhouse experiments were of the following species:

Scientific name	Common name
Abutilon theophrasti	velvetleaf
Setaria italica	foxtail millet
Sinapis alba	white mustard
Chenopodium album	common lambsquarters
Setaria faberia	giant foxtail
Galium aperine	catchweed
Polygonum persicaria	ladysthumb

Compound I-19 provides very good control of Abutilon theophrasti and Setaria italica when applied by the post-emergence method at application rates of 0.5 kg of a.s./ha.

Compound I-24 provides very good control of Abutilon theophrasti and Sinapis alba when applied by the post-emergence method at application rates of 0.5 kg of a.s./ha.

Compound I-25 provides very good control of Abutilon theophrasti, Setaria italica and Sinapis alba when applied by the post-emergence method at application rates of 0.5 kg of a.s./ha.

Compound I-32 provides very good control of Setaria italica and Sinapis alba when applied by the post emergence method at application rates of 0.095 kg of a.s./ha.

Compound I-49 provides very good control of Abutilon theophrasti, Setaria italica and Sinapis alba when applied by the post-emergence method at application rates of 1.91 kg of a.s./ha.

Compound I-49 provides very good control of Abutilon theophrasti, Setaria italica and Sinapis alba when applied by the post-emergence method at application rates of 3.0 kg of a.s./ha.

Compound I-51 provides very good control of Abutilon theophrasti and Chenopodium album when applied by the post-emergence method at application rates of 1.0 kg of a.s./ha.

Compound I-53 provides very good control of Abutilon theophrasti, Setaria italica and Sinapis alba when applied by the post-emergence method at application rates of 0.5 kg of a.s./ha.

Compound II-91 provides very good control of Abutilon theophrasti and Sinapis alba when applied by the post-emergence method at application rates of 2.0 kg of a.s./ha.

Compound II-87 provides very good control of Setaria faberia and Chenopodium album when applied by the post-emergence method at application rates of 1.0 kg of a.s./ha.

Compound II-94 provides very good control of Abutilon theophrasti, Setaria italica and Sinapis alba when applied by the post-emergence method at application rates of 3.0 kg of a.s./ha.

Compound II-111 provides very good control of Abutilon theophrasti, Setaria italica and Sinapis alba when applied by the post-emergence method at application rates of 1.0 kg of a.s./ha.

Compound II-112 provides very good control of Abutilon theophrasti, Setaria italica and Sinapis alba when applied by the post-emergence method at application rates of 1.0 kg of a.s./ha.

Compound II-15 provides very good control of Abutilon theophrasti, Setaria italica and Sinapis alba when applied by the post-emergence method at application rates of 0.5 kg of a.s./ha.

Compound II-10 provides very good control of Chenopodium album, Galium aperine and Polygonum persicaria when applied by the post-emergence method at application rates of 1.0 kg of a.s./ha.

Compound II-7 provides very good control of Abutilon theophrasti and Chenopodium album when applied by the post-emergence method at application rates of 1.0 kg of a.s./ha.

Use examples for growth-regulating action

The growth-regulating action of the phenylalanine derivatives of the formula I was demonstrated by greenhouse experiments:

The cultivation containers used were plastic pots containing loamy sand with approximately 3.0% of humus as the substrate. The seeds of the test plants were sown separately for each species.

For the pre-emergence treatment, directly after sowing, the active compounds, which had been suspended or emulsified in water, were applied by means of finely distributing nozzles. The containers were irrigated gently to promote germination and growth and subsequently covered with transparent plastic hoods

until the plants had rooted. This cover causes uniform germination of the test plants, unless this was adversely affected by the active compounds.

For the post-emergence treatment, the test plants were first grown to a height of from 3 to 15 cm, depending on the plant habit, and then treated with the active compounds which had been suspended or emulsified in water. The test plants were for this purpose either sown directly and grown in the same containers, or they were first grown separately as seedlings and transplanted into the test containers a few days prior to treatment. The application rate for the post-emergence treatment was 0.5 kg of a.s./ha.

Depending on the species, the plants were kept at 10-25°C or 20-35°C. The test period extended over from 2 to 4 weeks. During this time, the plants were tended, and their response to the individual treatments was evaluated.

At the end of the experiment, the observed growth-regulating action was recorded by measuring the height of growth. The measured values obtained in this manner were compared to the height of growth of untreated plants.

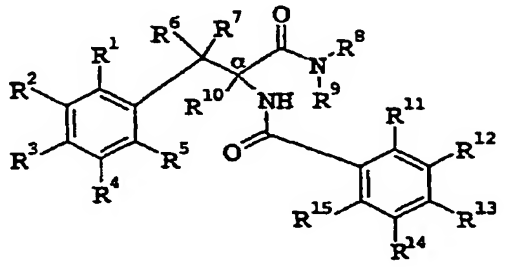
Compound II-92, when applied post-emergence at a rate of 500 g/ha, had a significant impact on the longitudinal growth of Zea mays L. 14 days after application (see Tab. III)

Compound	Height in cm	Plant
II-92	31-33	Zea mays L.
Untreated	40-42	Zea mays L.

Table III

We claim:

1. A phenylalanine derivative of the formula I



(I)

in which

R^1, R^2, R^4, R^5, R^{13} and R^{15} independently of one another are hydrogen, halogen, hydroxyl, mercapto, nitro, cyano, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_2-C_6-haloalkenyl, C_2-C_6-haloalkynyl, C_1-C_6-haloalkoxy, C_3-C_6-haloalkenyloxy, C_3-C_6-haloalkynyloxy, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_3-C_6-haloalkynylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_3-C_6-haloalkynylsulfinyl, C_1-C_6-haloalkylsulfonyl, C_3-C_6-haloalkenylsulfonyl, C_3-C_6-haloalkynylsulfonyl, formyl, C_1-C_6-alkylcarbonyloxy, C_1-C_6-alkoxy-C_1-C_4-alkyl, C_3-C_6-alkenyloxy-C_1-C_4-alkyl, C_3-C_4-alkynyloxy-C_1-C_4-alkyl, C_1-C_6-alkylthio-C_1-C_4-alkyl, C_3-C_6-alkenylthio-C_1-C_4-alkyl, C_3-C_4-alkynylthio-C_1-C_4-alkyl, C_1-C_6-alkylcarbonyl-C_1-C_4-alkyl, C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkyl, C_1-C_6-alkoxycarbonyl-C_1-C_4-alkyl, C_1-C_6-alkoxy-C_1-C_4-alkoxy, C_3-C_6-alkenyloxy-C_1-C_4-alkoxy, C_3-C_4-alkynyloxy-C_1-C_4-alkoxy, C_1-C_6-alkylthio-C_1-C_4-alkoxy, C_3-C_6-alkenylthio-C_1-C_4-alkoxy, C_3-C_6-alkynylthio-C_1-C_4-alkoxy, C_1-C_6-alkylcarbonyl-C_1-C_4-alkoxy, C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkoxy, C_1-C_6-alkoxycarbonyl-C_1-C_4-alkoxy or CO-R^{16};

R^3 is hydrogen, halogen, mercapto, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_2-C_6-haloalkenyl, C_2-C_6-haloalkinyl, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_3-C_6-haloalkynylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-halo-alkenylsulfinyl, C_3-C_6-haloalkynylsulfinyl, C_1-C_6-haloalkylsulfonyl, C_3-C_6-haloalkenylsulfonyl, C_3-C_6-haloalkynylsulfonyl, C_1-C_6-alkoxy-C_1-C_4-alkyl, C_3-C_6-alkenyloxy-C_1-C_4-alkyl, C_3-C_4-alkynyloxy-C_1-C_4-alkyl, C_1-C_6-alkylthio-C_1-C_4-alkyl, C_3-C_6-alkenylthio-C_1-C_4-alkyl, C_3-C_6-alkynylthio-C_1-C_4-alkyl, C_1-C_6-alkylcarbonyl-C_1-C_4-alkyl, C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkyl, C_1-C_6-alkyloxycarbonyl-C_1-C_4-alkyl or CO-R^{16};

R^6 is hydrogen, C_1-C_6-alkyl, C_2-C_6-alkenyl or C_2-C_6-alkynyl;

R^7 is hydrogen, halogen, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-haloalkyl, C_2-C_6-haloalkenyl or C_2-C_6-haloalkynyl;

R^8 is methyl, ethyl, C_1-C_6-alkoxy or hydroxyl;

R^9 is hydrogen or C_1-C_6-alkyl;

R^{10} is hydrogen, C_1-C_6-alkyl, C_1-C_6-alkoxycarbonyl or C_1-C_6-haloalkoxylcarbonyl;

R^{11} is halogen, mercapto, nitro, cyano, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_2-C_6-haloalkenyl, C_2-C_6-haloalkynyl, C_1-C_6-haloalkoxy, C_3-C_6-haloalkenyloxy, C_3-C_6-haloalkynyloxy, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_3-C_6-haloalkynylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_3-C_6-haloalkynylsulfinyl, C_1-C_6-haloalkylsulfonyl, C_3-C_6-haloalkenylsulfonyl, C_3-C_6-haloalkynylsulfonyl, formyl, C_1-C_6-alkylcarbonyloxy, C_1-C_6-alkoxy-C_1-C_4-alkyl, C_2-C_6-alkenyloxy-C_1-C_4-alkyl,

C_3-C_4-alkynyloxy-C_1-C_4-alkyl, C_1-C_6-alkylthio-C_1-C_4-alkyl,
C_2-C_6-alkenylthio-C_1-C_4-alkyl,
C_3-C_4-alkynylthio-C_1-C_4-alkyl,
C_1-C_6-alkylcarbonyl-C_1-C_4-alkyl,
C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkyl,
C_1-C_6-alkyloxycarbonyl-C_1-C_4-alkyl,
C_1-C_6-alkoxy-C_1-C_4-alkoxy, C_3-C_6-alkenyloxy-C_1-C_4-alkoxy,
C_3-C_4-alkynyloxy-C_1-C_4-alkoxy,
C_1-C_6-alkylthio-C_1-C_4-alkoxy,
C_3-C_6-alkenylthio-C_1-C_4-alkoxy,
C_3-C_6-alkynylthio-C_1-C_4-alkoxy,
C_1-C_6-alkylcarbonyl-C_1-C_4-alkoxy,
C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkoxy,
C_1-C_6-alkyloxycarbonyl-C_1-C_4-alkoxy or CO-R^{16};

R^{12} and R^{14} independently of one another are hydrogen,
halogen, hydroxyl, mercapto, cyano, C_1-C_6-alkyl,
C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-alkoxy,
C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-alkylthio,
C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl,
C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl,
C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl,
C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_3-C_6-haloalkenyl,
C_2-C_6-haloalkynyl, C_1-C_6-haloalkoxy, C_3-C_6-haloalkenyloxy,
C_3-C_6-haloalkynyloxy, C_1-C_6-haloalkylthio,
C_2-C_6-haloalkenylthio, C_3-C_6-haloalkynylthio,
C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl,
C_3-C_6-haloalkynylsulfinyl, C_1-C_6-haloalkylsulfonyl,
C_3-C_6-haloalkenylsulfonyl, C_3-C_6-haloalkynylsulfonyl,
formyl, C_1-C_6-alkylcarbonyloxy,
C_1-C_6-alkoxy-C_1-C_4-alkyl, C_3-C_6-alkenyloxy-C_1-C_4-alkyl,
C_3-C_4-alkynyloxy-C_1-C_4-alkyl, C_1-C_6-alkylthio-C_1-C_4-alkyl,
C_3-C_6-alkenylthio-C_1-C_4-alkyl,
C_3-C_4-alkynylthio-C_1-C_4-alkyl,
C_1-C_6-alkylcarbonyl-C_1-C_4-alkyl,
C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkyl,
C_1-C_6-alkyloxycarbonyl-C_1-C_4-alkyl,
C_1-C_6-alkoxy-C_1-C_4-alkoxy, C_3-C_6-alkenyloxy-C_1-C_4-alkoxy,
C_3-C_4-alkynyloxy-C_1-C_4-alkoxy,
C_1-C_6-alkylthio-C_1-C_4-alkoxy,
C_3-C_6-alkenylthio-C_1-C_4-alkoxy,
C_3-C_6-alkynylthio-C_1-C_4-alkoxy,
C_1-C_6-alkylcarbonyl-C_1-C_4-alkoxy,
C_1-C_6-alkylcarbonyloxy-C_1-C_4-alkoxy,
C_1-C_6-alkyloxycarbonyl-C_1-C_4-alkoxy or CO-R^{16}; and

R^{16} is hydrogen, hydroxyl, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-haloalkyl, C_2-C_6-haloalkenyl, C_2-C_6-haloalkynyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-haloalkoxy, C_1-C_6-alkylamino or di(C_1-C_6-alkyl)amino;

or

R^7 together with R^{10} forms a C_3-C_4-alkylene or -alkenylene chain, where the C_3-C_4-alkylene or -alkenylene chain may carry 1-3 substituents from the group consisting of halogen, nitro or cyano and/or one carbon atom of the C_3-C_4-alkylene chain may be replaced by a heteroatom selected from the group consisting of oxygen, sulfur and nitrogen and/or by a carbonyl group.

2. A phenylalanine derivative of the formula I as claimed in claim 1, in which

R^1 is hydrogen, halogen, nitro, cyano, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy, C_3-C_6-haloalkenyloxy, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_1-C_6-haloalkylsulfonyl or C_3-C_6-haloalkenylsulfonyl;

R^2 is hydrogen, halogen, nitro, cyano, C_1-C_6-alkyl, C_2-C_6-alkynyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy, C_3-C_6-haloalkenyloxy or C_3-C_6-haloalkynyloxy;

R^3 is hydrogen, halogen, C_1-C_6-alkyl or C_1-C_6-haloalkyl;

R^4 is hydrogen, halogen, nitro, cyano, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-haloalkyl or C_1-C_6-haloalkoxy;

R^5 is hydrogen, halogen, nitro, cyano, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-alkoxy, C_3-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy or C_3-C_6-haloalkenyloxy; and

R^6 is hydrogen or C_1-C_6-alkyl;

R^7 is hydrogen, halogen, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl or C_1-C_6-haloalkyl;

R^8 is methyl, ethyl, hydroxyl or methoxy;

R^9 is hydrogen or methyl;

R^{10} is hydrogen, C_1-C_6-alkyl, C_1-C_6-alkoxycarbonyl or C_1-C_4-haloalkoxycarbonyl;

R^{11} is halogen, nitro, cyano, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_1-C_6-haloalkylsulfonyl, C_3-C_6-haloalkenylsulfonyl or CO-R^{16};

R^{13} is hydrogen, halogen, nitro, cyano, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_1-C_6-haloalkylsulfonyl, C_3-C_6-haloalkenylsulfonyl or CO-R^{16};

R^{12} and R^{14} independently of one another are hydrogen, halogen, cyano, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-alkylthio, C_3-C_6-alkenylthio, C_3-C_6-alkynylthio, C_1-C_6-alkylsulfinyl, C_3-C_6-alkenylsulfinyl, C_3-C_6-alkynylsulfinyl, C_1-C_6-alkylsulfonyl, C_3-C_6-alkenylsulfonyl, C_3-C_6-alkynylsulfonyl, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy, C_1-C_6-haloalkylthio, C_3-C_6-haloalkenylthio, C_1-C_6-haloalkylsulfinyl, C_3-C_6-haloalkenylsulfinyl, C_1-C_6-haloalkylsulfonyl, C_3-C_6-haloalkenylsulfonyl or CO-R^{16};

R^{15} is hydrogen, halogen, C_1-C_6-alkyl or C_1-C_6-haloalkyl;

R^{16} is hydrogen, hydroxyl, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkoxy, C_1-C_6-haloalkoxy, C_1-C_6-alkylamino or di(C_1-C_6-alkyl)amino;

and its agriculturally useful salts.

3. A phenylalanine derivative of the formula I as claimed in claim 1 or 2 in which

R^1 is hydrogen, halogen, cyano, C_1-C_6-alkyl, C_1-C_6-alkylthio, C_1-C_6-alkylsulfinyl or C_1-C_6-alkylsulfonyl;

R^2 is hydrogen, halogen, cyano, C_1-C_6-haloalkyl or C_1-C_6-alkyl;

R^3 is hydrogen, C_1-C_6-alkyl or halogen;

R^4 is hydrogen, halogen, C_1-C_6-alkyl or C_1-C_6-haloalkyl;

R^5 is hydrogen, halogen, C_1-C_6-alkyl or C_1-C_6-haloalkyl;

R^6 is hydrogen or C_1-C_6-alkyl;

R^7 is hydrogen, C_1-C_6-alkyl, C_2-C_6-alkenyl or C_2-C_6-alkynyl;

R^8 is methyl, hydroxyl or methoxy;

R^9 is hydrogen or methyl;

R^{10} is hydrogen; and

R^{11} is halogen, cyano, C_1-C_6-alkyl, C_1-C_6-alkylthio, C_1-C_6-alkylsulfinyl, C_1-C_6-alkylsulfonyl, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy, C_1-C_6-haloalkylthio, C_1-C_6-alkylsulfonyl or C_1-C_6-alkylsulfinyl;

R^{12}, R^{13} and R^{14} independently of one another are hydrogen, halogen, cyano, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-alkylthio, C_1-C_6-alkylsulfinyl, C_1-C_6-alkylsulfonyl, C_1-C_6-haloalkyl, C_1-C_6-haloalkoxy or C_1-C_6-haloalkylthio; and

R^{15} is hydrogen.

4. A phenylalanine derivative of the formula I as claimed in any of claims 1, 2 or 3 in which

R^1, R^2, R^3, R^5 in each case independently of one another are hydrogen, fluorine, chlorine, methyl or ethyl;

R^4, R^6, R^{10}, R^{14} and R^{15} are hydrogen;

R^7 is hydrogen, methyl or ethyl;

R^8 is methoxy, methyl or hydroxyl;

R^9 is hydrogen;
is methyl if R^8 is hydroxyl;

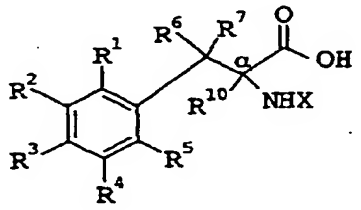
R^{11} is fluorine, chlorine, halomethyl such as fluoromethyl, difluoromethyl, trifluoromethyl, halomethoxy, such as fluoromethoxy, difluoromethoxy, trifluoromethoxy, halothioalkyl, such as fluorothiomethyl, difluorothiomethyl, trifluorothiomethyl, methylsulfinyl or methylsulfonyl;

R^{12} is hydrogen, cyano, methyl, fluorine, chlorine, halomethyl, such as fluoromethyl, difluoromethyl, trifluoromethyl, halomethoxy, such as fluoromethoxy, difluoromethoxy, trifluoromethoxy, halothioalkyl, such as fluorothiomethyl, difluorothiomethyl, trifluorothiomethyl;

R^{13} is hydrogen, fluorine, chlorine.

5. A process for preparing the phenylalanine derivatives of the formula I as claimed in any of claims 1 to 4, which comprises

(A) linking a phenylalanine derivative of the formula II



(II)

which is protected at the amino function by a protective group X to a support resin;

(B) removing the protective group X by addition of a base,

(C) acylating the resulting compounds at the nitrogen

and

(D) cleaving the compounds acylated at the nitrogen from the solid support by addition of an acid, followed by addition of a condensing agent with an amine IX

$$R^8\text{-}NH\text{-}R^9 \qquad (IX)$$

to give the phenylalanine derivatives I as claimed in any of claims 1 to 3.

6. A process for preparing the phenylalanine derivatives of the formula I as claimed in any of claims 1 to 4 in which R^9 = hydrogen, which comprises

(A) reacting a polymer resin X

$$Pol\text{-}CHO \qquad (X)$$

with an amine XI

$$H^2NR^8 \qquad (XI)$$

in the presence of a reducing agent;

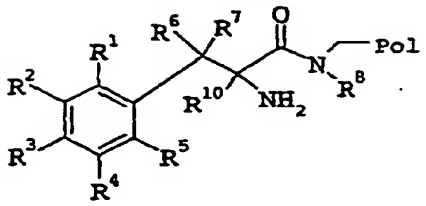
(B) reacting the aminated resin XII

$$Pol\text{-}CH_2\text{-}NHR^8 \qquad (XII)$$

obtained in step A with a phenylalanine derivative of the formula II as set forth in claim 4;

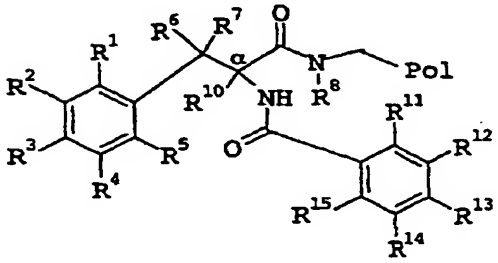
(C) removing the protective group X by addition of a base;

(D) and acylating the resulting compounds XIII



(XIII)

to give the compounds XIV



(XIV)

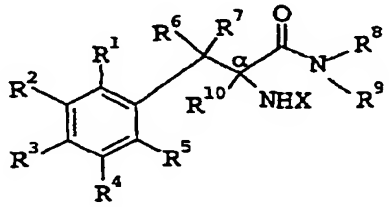
which are subsequently, by addition of an acid, cleaved from the solid support, giving the compounds I.

7. A process for preparing the phenylalanine derivatives of the formula I as claimed in any of claims 1 to 4, which comprises

(A) reacting a phenylalanine derivative of the formula II as set forth in claim 4, which is protected at the amino function by a protective group X, with an amine IX

HNR^8R^9 (IX)

in an inert aprotic dipolar organic solvent to give the compounds XV



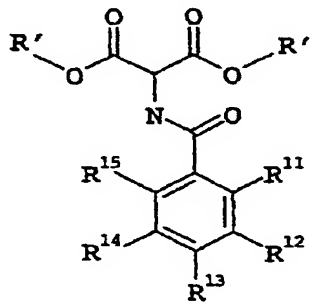
(XV)

(B) removing the protective group X, and

(C) acylating the compounds obtained in step B to give the compounds I.

8. A process for preparing the phenylalanine derivatives of the formula I in which R^9 = hydrogen as claimed in any of claims 1 to 4, which comprises

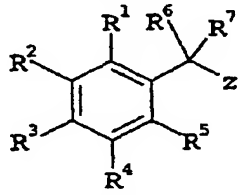
(A) reacting an aminomalonic acid ester derivative XVII



(XVII)

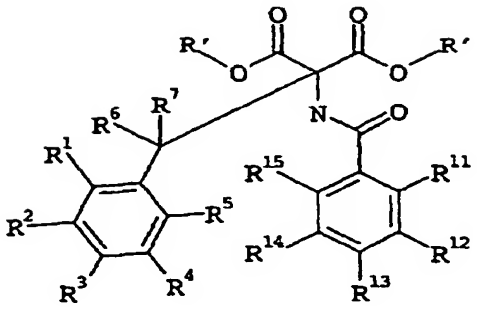
in which R' is a low-molecular-weight organic radical

with a benzyl derivative XVIII



XVIII

to give the diesters XIX



XIX

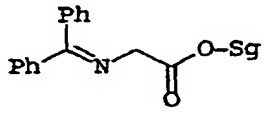
(B) decarboxylating and hydrolyzing the diester XIX, followed by reaction with an amine IX

HNR^8R^9 (IX)

in an inert aprotic dipolar organic solvent using a condensing agent, to give the compounds I.

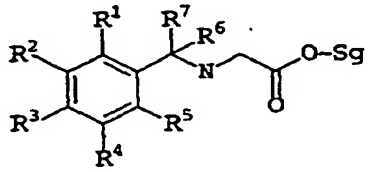
9. A process for preparing the phenylalanine derivatives of the formula I as claimed in any of claims 1 to 4, which comprises

(A) reacting the benzyl derivative XVIII with an alkylating agent XXI



XXI

to give the compounds XXII



XXII

(B) and acylating the resulting compounds at the nitrogen

and

(C) reacting the nitrogen-acylated compounds by addition of a condensing agent with an amine IX

$$R^8\text{-NH-}R^9 \qquad \text{(IX)}$$

to give the phenylalanine derivatives I as claimed in any of claims 1 to 3.

10. A composition which comprises at least one phenylalanine derivative of the formula I or an agriculturally useful salt of a phenylalanine derivative of the formula I as claimed in any of claims 1 to 4 and customary auxiliaries.

11. A composition suitable for controlling undesirable vegetation, which composition comprises a solid or liquid carrier and at least one phenylalanine derivative of the formula I or an agriculturally useful salt of a phenylalanine derivative of the formula I as claimed in any of claims 1 to 4.

12. The use of the compounds I as claimed in any of claims 1 to 4 for preparing a composition suitable for controlling undesirable vegetation.

13. A method for controlling undesirable vegetation, which comprises allowing a herbicidally effective amount of at least one phenylalanine derivative of the formula I or an agriculturally useful salt of a phenylalanine derivative of the formula I as claimed in any of claims 1 to 4 to act on plants, their habitat and/or on seed.

14. A composition for regulating plant growth, comprising a growth-regulating amount of at least one substituted phenylalanine derivative of the formula I or an agriculturally useful salt of I as claimed in any of claims 1 to 4 and at least one inert liquid and/or solid carrier and, if desired, at least one surfactant.

15. A process for preparing compositions for regulating plant growth, which comprises mixing a growth-regulating amount of at least one substituted phenylalanine derivative of the formula I or an agriculturally useful salt of I as claimed in any of claims 1 to 4 with at least one inert liquid and/or solid carrier and, if desired, at least one surfactant.

16. A method for regulating plant growth, which comprises allowing a growth-regulating amount of at least one substituted phenylalanine derivative of the formula I or an agriculturally useful salt of I as claimed in any of claims 1 to 4 to act on plants.